INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH AND INNOVATIVE STUDIES
ISSN: 2820-7157
www.ijsrisjournal.com

February 2026 **Volume 5** **Number 1** **147-172**

Received Date: 20 December 2025 **Accepted Date: 12 January 2026** **Published Date: 1 February 2026**

The Digitalization of the letter of credit in Support of the Development of International Trade

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Abstract

Our world is both ancient and young, disordered, and complex; it is globalized and interconnected. It is currently seeking new paths and rules of conduct, aiming to build new balances on all levels — geopolitical as well as geoeconomic.

To the question of understanding where international trade is heading, my answer would be: through reading — a deep and thoughtful reading of international political and socio-economic life, in order to detect real ruptures, major evolutions, and thus continue the story.

In the **4th** millennium, the Sumerian city between the Tigris and Euphrates was organized as a state around four main actors: the people (founders of the city), the priest (the religious authority), the prince (the political leader), and the merchant (**homo economicus**).

The merchant, driven by personal interest and enrichment through trade both inside and outside the city, within the country and empire, and even among distant, cross-border peoples, necessarily adopted commercial ethics and values-conciliation, compromise-seeking, patience, and flexibility-which gave him a certain power known as commercial power. In essence, this merchant held strong relational and operational skills: know-how and well-being.

Economic globalization, supported by political will, is synonymous with open economies, massive flows of goods, and the development of globalized trade across a worldwide transactional space. The key success factors of globalization include successive rounds of GATT negotiations, reduction of customs duties, creation of the World Trade Organization, development of regional trade agreements, multiplication of free trade zones, global presence of multinational corporations, globalization of financial markets, explosive growth, in both substance and form, of conventional and especially containerized maritime transport.

Maritime transport plays a key role in the interconnection of continents, countries, and economies, on a planetary scale, with an ever-greater variety and volume of goods. Over 90% of international trade is carried out by sea-around **11** billion tonnes in 2022 compared to **550** million tonnes in 1950.

The widespread deployment of global value chains was made possible thanks to maritime transport, which effectively reorganized the global productive and commercial R&D landscape.

World history has witnessed successive national currencies gaining international status due to the power and dominance of their issuing countries' economies, seen as commercial, cultural, and economic centers attracting the world's wealth.

The general context of the theme provides a clear idea of the underlying assumptions of international trade. The internationalization of economies and financial globalization-characterized by increasing intra-group trade and significant reshoring investments-have changed the nature of trade, giving businesses broader access to global markets and enabling the sale of goods and services in greater quantities.

The remoteness of clients, cultural diversity, currency and political variety, multiple risk-sharing procedures, and diverse international regulations all increase the complexity of sales and the risk of costly disputes between importers and exporters. This context requires simplification and facilitation through the digitization and digitalization of operational processes and financial and documentary flows, with risk management across the entire international trade value chain.

Developing tools to promote digitalization in international trade and economic relations is an urgent necessity, considering the rising risks, procedural complexity, partner remoteness, regulatory diversity, the fragility of certain policies, and the stubbornness or even obstinacy of stakeholders when it comes to interpreting texts in terms of compliance, consistency, and completeness of documents representing goods, products, and services.

The introduction of digital technologies and artificial intelligence in international trade must be a continuously growing process, covering the entire value chain of trusted third parties in the global operation process, along with periodic reviews of regulations in harmony with the technological environment and trade practices between countries-considering their discontinuity and upheavals.

Keywords: Globalization, International Trade, Maritime Transport, International Currency, Digitalization, letter of Credit, Artificial Intelligence, Blo

Introduction

The maps of international trade are constantly shifting. Indeed, the emerging new world order among America—the hegemonic superpower, Russia—the audacious force, and China—the rising four-millennia-old power—raises the eternal question of global governance in terms of international life. The inflation of geopolitical and geostrategic developments is the most striking manifestation of this phenomenon.

A proper reading of our world through history, and the human memory software in political, legal, economic, and social aspects, would enable academics, historians, and futurists to predict the future of humanity, particularly concerning one of the most important strategic axes governing international relations: **international trade**—a field involving ancient peoples, old states, longstanding cultures, diverse civilizations, nations, nation-states, and state-nations.

From antiquity to the present day, international trade—as old as civilization itself—has served as a bridge between civilizations. Trade routes were numerous and expanded with Mesopotamian civilization, stretching to the northern and southern Mediterranean, to northern countries, sub-Saharan Africa, and later to China, eventually reaching all countries with the discovery of the Americas and Australia.

The great geographical discoveries by the Portuguese **Marco Polo** (1254–1324), the Genoese **Christopher Columbus** (1451–1506), the Portuguese **Vasco da Gama** (1469–1524), and **Ferdinand Magellan** (1480–1521) led to a transformation of international trade due to the emergence of new colonial powers.

These geographical discoveries, supported by advances in maritime navigation, fueled the rise of international trade. Spanish and Portuguese empires traded with their colonies in Latin America, coastal African countries, and Asia, favoring the establishment of trade outposts as far afield as possible (e.g., Macao in China).

In the 17th century, the **Netherlands** invented merchant and financial capitalism by merging commerce with banking—exemplified by the Dutch East India Company and the Bank of Amsterdam. Through its trading posts, the company operated globally, combining private capital with state guarantees.

The Dutch thus built an empire of colonies created by maritime trading companies, merchants, and Dutch sailors. The Netherlands ruled the seas and oceans, becoming the masters of international trade during the second half of the 17th century. Trade focused on spices and local products from Indonesia, Suriname, the Antilles, and beyond.

The invasion of the Netherlands by the armies of **Louis XIV** led to the loss of their colonies to **England**, which built a powerful empire—the **Commonwealth**—covering vast territories, accounting for a quarter of the world’s landmass and population. Trade flourished over great distances, enriched by new products accessible to people thousands of

kilometers apart. English capitalism combined free trade with specialization.

On another front, the **framework of international trade facilitation** reflects the importance given to global commerce by the institutions that govern this essential sector for humanity.

In both wartime and peacetime, international trade—always in pursuit of prosperity—sought methods of **facilitation, fluidity, and security** in exchanges, fluctuating between **free trade** and **protectionism**.

The complexity of international trade policies and the diversity of national laws regulating business required the creation of international institutions and the formalization of a supranational regulatory framework—known, accepted, and validated by all—to enable economic, financial, and commercial coexistence among nations.

The **United Nations Charter** of **June 26, 1945,** gave birth to the **UN**. One of its organs, the **Economic and Social Council (ECOSOC)**, succeeded in drafting the charter of the **International Trade Organization (ITO)**, known as the **Havana Charter** in **March 1948**. However, the ITO never came into existence due to the U.S. Congress's refusal to ratify the charter.

Instead, the **General Agreement on Tariffs and Trade (GATT)** was created on **January 1, 1948**, by 23 founding countries. It became the forum for discussions on various trade issues (tariffs, non-tariff measures, etc.). Negotiations followed: Geneva (1948), Annecy (1949), Torquay (1950), Geneva (1956), Dillon Round (1960–1962), Kennedy Round (1964–1967), Tokyo Round (1973–1979), Uruguay Round (1979), and the Doha Round (2001).

The **World Trade Organization (WTO)** was established on **April 15, 1994**, in **Marrakech**, by 123 countries. Its charter consolidated agreements on goods, services, and intellectual property rights related to trade. Multilateralism declined after 2013. It wasn't until **February 22, 2017**, that the first multilateral agreement since the WTO's founding came into force—after two-thirds of its 160 members accepted it: the **Trade Facilitation Agreement (TFA)**.

Ultimately, the core idea of this agreement—with its 35 technical trade facilitation measures—is to **harmonize trade formalities**, **simplify customs and strategic procedures**, **accelerate information exchange**, and **reduce the number of documents**. This is the driving principle behind WTO institutions.

The **International Regulatory Framework** proves essential for sound governance and for managing disputes between importers and exporters. The institutional landscape was enriched by the creation, in **1919**—over 100 years ago—of the **International Chamber of Commerce (ICC)**, also known as the **World Business Organization**. The ICC pursues multiple objectives: promotion of international trade, services, and investments, elimination of obstacles and distortions hindering global trade, enhanced integration of both developed and developing countries into the market economy and the global economy, combating protectionism, expanding international flows of goods, services, capital, and technology.

The harmonization of international trade practices has been achieved through the drafting of the *Uniform Customs and Practice for Documentary Credits*, brochure 600, the *Uniform Rules for Collections*, brochure 522, and the *Uniform Rules for Demand Guarantees*. This harmonization was also made possible through the creation of several institutions, including the **International Court of Arbitration (ICA)**, the **International Bureau of Chambers of Commerce (IBCC)**, the **Institute of International Business Law and Practice (IIBLP)**, the **World Business Council for Sustainable Development (WBCSD)**, and the **Commercial Crimes Division (CCD)**, composed of the **Commercial Crime Bureau (CCB)**, the **International Maritime Bureau (IMB)**, and the **Counterfeiting Intelligence Bureau (CIB)**.

The **International Chamber of Commerce (ICC)** introduced the **Incoterms** in 1936 as a contractual standard that primarily defines the tasks, costs, and risks related to the delivery of goods from sellers to buyers, outlining the respective obligations of both parties. The Incoterms are updated regularly—typically every 10 years—to adapt to changes in global trade. The **Incoterms 2020**, currently in effect since January 1, cover 11 terms for international commercial transactions.

The sources of transport law conventions are numerous and as varied as the modes of transport: **Road**: Geneva Convention of May 19, 1956, on the Contract for the International Carriage of Goods by Road (*CMR*), **Maritime**: Brussels Convention of August 25, 1924 (Hague Rules), the Brussels Convention (Visby Rules) of 1979, the UN Convention of March 31, 1978 (Hamburg Rules), and the UNCITRAL Convention of December 11, 2018 (Rotterdam Rules), **Rail**: Berne Convention (*COTIF*) of May 9, 1980 (*CIM*), **Air**: Warsaw Convention of October 12, 1929, and the Montreal Convention of May 28, 1999, **Inland Waterways**: Budapest Convention of June 22, 2001 (*CMNI*) and **Multimodal**: UN Convention of May 24, 1980 (*MT Convention*).

The **current landscape of international trade** reveals a turbulent view of the global economic scene. Contrary to British free-market capitalism, **American capitalism** often reflects a latent **protectionism**, energized by technological innovation.

In 1970, the **United States** led the world economy with **33% of global GDP**, followed by the **USSR (15%)**, **West Germany**, the **UK**, **France (5%)**, and **China and Japan (4%)**. Today's global economic hierarchy looks different: the **United States** remains dominant, closely followed by **China**, then **Japan**, **Germany**, **India**, the **UK**, **France**, **Italy**, **Brazil**, and **Canada**.

The **internationalization of production**, resulting from a new global division of labor and markets, has given a significant boost to international trade. However, it has also **weakened some economies**, leading to **economic conflicts**, such as the one between the **United States and China**.

Today, this **global economic dynamic** is extending to new domains, triggering a global race for dominance in **green technologies**, which depend heavily on raw materials like **cobalt, platinum, iridium, beryllium, borates, palladium**, and **electronic components**.

In parallel, **digital technologies** are now at the service of international trade. The recent and future growth of international trade is firmly underpinned by digital technologies, which are profoundly transforming international commerce and its operational processes.

Indeed, international trade is a key and ever-evolving component of the global economy, both **qualitatively and quantitatively**. Its momentum must be reassessed in light of the **digitization and digitalization** of all processes and interactions among international trade players.

The **exchange of information**, **monitoring of goods transportation**, **management and control of operations**, **data analysis**, and **automation** have become essential priorities and current requirements in the field of international trade.

Through **digitalization**, the **logistics industry** can improve processes, reduce costs, and increase **transparency**, which in turn helps mitigate risks, eliminate sources of disruption, and ease supply chain bottlenecks.

The **financial dimension** of international trade is also fundamental—it underpins every global transaction. After exploring the evolution of trade from its early days to its current complexity, and the tensions among states during international negotiations for trade facilitation, as well as the legal frameworks governing global trade, the **financial component**, which seeks to **build trust between foreign trading partners**, deserves close attention.

There are numerous **payment methods and mechanisms**, designed to accommodate a variety of situations, regulations, preferences, and regional trade practices. Instruments of payment include **international wire transfers**, **checks**, and **commercial papers** (such as **bills of exchange** that are accepted and/or guaranteed).

The **choice of payment technique** depends on the **level of trust** between parties, industry or regional **payment customs**, and the **assessment of potential risks** (commercial, political, monetary). To ensure proper execution of their respective obligations, both the **importer and exporter** rely on **banks**—acting as agents for international transfers or documentary collections, and as **committed parties** in the case of a **documentary credit**.

The **documentary credit**, commonly referred to as **CREDOC** (*Credere Documentalium*), means "to believe" (*credere*) in the **documents** (*documenta*).

Because of geographical distance, **contracting parties** (importers and exporters) often don't know each other and cannot easily build trust during the first transaction. The **exporter** is reluctant to manufacture or ship goods without assurance of payment. The **importer**, on the other hand, may refuse to transfer funds without confirmation that the shipment fully complies with the contract terms.

These **conflicting interests** necessitate the involvement of a **responsible and committed intermediary** to ensure the successful outcome of the trade transaction—namely, the **bank**.

The International Chamber of Commerce (ICC), during its 7th Congress held in 1939, adopted the first edition of the *Uniform Customs and Practice for Documentary Credits* (UCP). This initial version has since undergone several revisions to clarify, elaborate on, and introduce new documentary credit techniques in line with the evolution of business practices, the speed of transport, and advancements in digital information and communication technologies.

A documentary credit is a commitment made by an issuing bank, on behalf of its importing client (applicant), or on its own behalf, to pay the seller (beneficiary) the value of documents representing the shipment of goods or the performance of a service, subject to the presentation of

documents that comply with the terms and conditions of the credit.

The documentary credit is regarded as a tool that secures international trade transactions. Indeed, it offers several advantages, such as payment security and credit risk reduction. However, it also presents a number of limitations: complexity, cost, rigidity, documentary discrepancies, and, most importantly, it does not guarantee the quality of the goods.

The risk component in international trade is addressed in various forms to mitigate its effects—such as counterparty risk, non-performance risk, ethical risk, currency risk, fraud, regulatory or compliance risk, strategic risk, country or reputational risk, technical, economic, financial, quality, manufacturing, documentary, fraud, non-delivery, processing failure, and payment delay risks.

These risks impact the bank and/or both parties in the international trade transaction—namely, the exporter and the importer. Risk management techniques vary from one financial institution to another. Ultimately, one may question whether these techniques are sufficient to effectively manage the risks of international trade. From a forward-looking perspective, wouldn't these techniques be more effective if the operational processes of the documentary credit were fully digitized?

I. The Foundations of International Trade

Trade is as ancient as humanity itself. History records dynamic exchanges between the Pharaohs and Levantine kings around 1400 BCE, involving gold and chariots in exchange for slaves and horses. Throughout millennia, civilizations that coexisted made cross-border trade a central pillar for the prosperity and enrichment of their peoples, and consequently, the central authority of each nation.

Jacques Huntzinger refers to "*the earliest trade flows—the very first form of international economy—where merchants engaged in long-distance trade, exchanging agricultural goods for copper and tin metals... the earliest form of international life was attributed to Ubaid, a civilizational city... which created international commerce by exchanging surplus cereals for essential products from distant lands, such as wood and stone."*

He draws on the famous work by Samuel Noah Kramer, *"History Begins at Sumer"*, which asserts that it was in present-day Iraq—the cradle of the Sumerians—that an organized international life first emerged, predating both China and Egypt. This claim is based on the essential role played by the merchant in trading with other civilizational cities.

The merchant was one of the four pillars of city life: the People, the Priest, the Prince, and the Merchant. The *homo economicus*, embodied by the Sumerian merchant-trader, operated in both national (domestic market) and international (foreign market) arenas. In fact, it was these merchant-traders of Sumer, backed by King Sargon to trade beyond Ethiopia and India, who were the pioneers and forerunners of the first wave of economic globalization, reaching as far as Iran, Syria, and Bahrain.

In the 2nd century BCE, the Chinese Han Dynasty developed trade routes to export silk to the East, Persia, Egypt, and Rome. This dynasty was the driving force behind the second wave of globalization.

The third wave of globalization was led by the Arab-Islamic Empire, with its diverse and rich trade relations with African and Asian countries. Europe experienced several phases of economic globalization—initiated by the Spanish and Portuguese in the 16th century toward the Americas, and by the British in the 19th century toward India and China.

A. Political Economy and International Trade

The Netherlands invented merchant and financial capitalism in the 17th century, combining trade (the Dutch East India Company, considered the first multinational corporation in 1602) with finance (the Bank of Amsterdam, founded in 1609).

British capitalism, combining free trade with specialization, developed cotton industries in England while assigning its colonies to various types of production depending on the country, such as tea, poppy, indigo, cotton… Trade flourished as far as possible, enriched by new products made available to distant countries thousands of kilometres away.

In contrast to British free-trade capitalism, American capitalism exhibits latent protectionism driven by technological innovation. The internationalization of production — a result of the new global division of labor and markets — has further energized international trade.

David Hume's work "Of the Balance of Trade", published in 1758 before Adam Smith's "The Wealth of Nations" in 1776, is considered by economists to be the first real economic model. Both economists addressed international trade and the wealth generated by exchange.

All subsequent economic literature dealing with the same theme was initially based on discourse, then shifted toward logic, empirical analysis, and especially mathematical modeling according to the various schools of economic thought.

There are two main doctrines governing international trade: Free Trade and Protectionism.

Free trade, or non-interventionism by the state in international commercial exchanges (such as tariffs, non-tariff barriers, etc.), is an economic doctrine opposed to protectionism.

Protectionism raises both tariff and non-tariff barriers to protect domestic firms from competition imposed by imports. The main authors are known for their theories and models, such as Friedrich List and his infant industry argument, Kaname Akamatsu and the flying geese model.

Each country may specialize in goods or products where it has the greatest relative productivity.

Nobel laureate Paul Krugman, in his theory of strategic trade policy, highlights the role of public subsidies in excluding foreign firms from the market under monopoly conditions and in conquering foreign markets.

All international trade theories fall under one of the two doctrines mentioned above. Below are the main economic theories addressing international trade.

The wealth created by nations originates from either the agricultural system (Physiocrats) or the commercial system (Mercantilists).

Adam Smith, father of the theory of absolute advantage, based on division of labor and specialization in the production of a given good or sector, invites countries endowed with natural resources, advanced technology, and abundant labor to produce and export goods whose local cost is lower than their cost abroad, or to import them otherwise.

David Ricardo, with his theory of comparative advantage, based on external trade and the relative quantity of labor incorporated into the production of each good within each country. These differences in labor productivity are the source of comparative advantages that each country must exploit to generate profits through cross-border trade.

Considered simple, misunderstood, or non-intuitive by some economists, this theory was revisited and enriched with other criteria such as currency (Mark Blaug, Emmanuel Arghiri) and reevaluated by Paul Krugman, who emphasized the risks of specialization by introducing the hourly wage criteria of two trading partner countries.

Models followed Ricardo's, which considered only one factor (labor) and overlooked the impacts on economies, social classes, and income distribution between the two countries involved in international trade.

Then came the specific-factors model developed by Paul Samuelson and Ronald Jones, explained by Paul Krugman, integrating labor mobility, capital specificity, and land.

The factor endowments model developed by Eli Heckscher and Bertil Ohlin, and formalized by Paul Samuelson, is known as the HOS model, based on the abundance of labor and capital and their mobility across sectors.

The standard trade model was devised by Paul Krugman, focusing on terms of trade.

Michael Posner's model introduced innovation by creating a technological gap beneficial for technological firms, allowing them to profit through foreign trade by producing and exporting new products that meet global consumer needs.

This model was complemented by Raymond Vernon's product life cycle model, describing four stages in the product's international life cycle.

Internal and external economies of scale, product differentiation, strategies, intra-industry and inter-industry trade (with Marius Brülhart's work based on Grubel and Lloyd indices), price discrimination as a motivation for international trade, vertical and horizontal FDI, and their relationship with trade.

Growth and trade openness (Balassa, Learner, Edwards), export growth and GDP (Michaely, Feder, Syrquin, Chenery), comparison of local prices with world market prices (Barro, Dollar, Easterly, Lee), growth, investment, and international trade (Levine & Renelt), international trade and technology transfer (Coe & Helpman), development level and trade (Heilleiner), wealth and trade (Daniel Cohen).

Protectionism and free trade have been analyzed by François Henner, Gardner, Jacob Canderlivt, Matthew Decker, Torrens, John Stuart Mill, Graham, Manoilescu, Keynes.

Globalization and international trade have been examined by Pascal Le Merrer, Paul Krugman, Fabrice Defever, Jean-Louis Mucchielli, and Elhanan Helpman.

Globalization, with very ancient historical roots and its inherent challenges and mechanisms, gives international economics undeniable importance — both in its financial/monetary and commercial aspects.

The tangible and virtual coexist, making countries more interconnected than ever.

Nothing is more illustrative than the case of China, which transitioned from being a quasi-closed communist nation to one of the world's most open and present countries in the global arena.

China has had a trade surplus since 1994 and has become a true commercial power. A large portion of its accumulated wealth is invested in U.S. Treasury Bonds (over USD 835 billion), along with hundreds of billions in real estate investments.

In other words, through its "Go Out" strategy, China is effectively buying up the United States — the "beautiful country", or Meiguo, as the Chinese call it.

B. Key Players in the International Trade Arena

Brazil has risen to become the world's 9th largest economy, ahead of emerging economies such as Argentina and Mexico. South Africa has established itself as the leading economic power in the Southern African Development Community (SADC), surpassing Nigeria. Asia is a battleground for influence between two global superpowers—China and the United States—as well as two regional powers: Japan and India. This rivalry gave rise to the China-ASEAN Free Trade Area.

China, with its overwhelming economic strength, is expanding like an economic octopus, extending its territorial and market reach across the globe—land, islands, seas, oceans, and beyond. This wave of Chinese expansion has produced three decades of double-digit growth. Its massive trade surpluses have resulted in significant foreign currency inflows—over $3 trillion—much of which has been invested in short-term U.S. Treasury bonds, helping to finance the American trade deficit and public debt. China's latest trade figures are staggering in 2021, it recorded a trade surplus of €591 billion—greater than the entire GDP of Poland (the world's 21st largest economy). That same year, China's exports totaled €2.9 trillion, nearly equivalent to the GDP of the United Kingdom (the 5th largest economy globally).

India, now the world's 5th largest economy, boasts a population of 1.5 billion and positions itself as the world's technological talent pool, producing 500,000 IT engineers annually. Its 60 million-strong middle class further bolsters its domestic consumption capacity. Japan, devastated by the bombings of Hiroshima and Nagasaki and initially barred from becoming a military power, rose from its ashes to become the world's 3rd largest economy—surpassing its 12th-place position back in the 1980s—though it now trails behind China.

South Korea, driven by its powerful family-run conglomerates (*chaebols*) like Hyundai, Samsung, and LG, became the 13th largest global economy in 2008, with a GDP of $1.024 trillion USD. By 2022, it ranked 10th among the world's largest economies and 4th in Asia. Its per capita income soared from $100 USD in 1963 to over $31,000 USD by October 2021. Other Asian states, often referred to as the "Asian Tigers"—such as Taiwan, Singapore, and Malaysia—are also major actors in international trade.

The Middle East, with its ancient civilizations and long-standing cultures, was reshaped by British and French imperialism. Today, it is a strategic target for the United States—not only for its geography and vast oil and gas resources but also for its affluent consumer markets, which absorb a substantial portion of Western commercial and military exports. Turkey, for its part, seeks to expand its regional political influence through robust export activity.

The United Kingdom, after World War II, chose to relinquish its global power status—held during the 19th and 20th centuries—and strategically aligned itself with the new global superpower, the United States. Today, the UK ranks 6th among the world's largest economies.

Germany, by leveraging its industrial base and international trade capacity, has built formidable geoeconomic power centered on the quality of its products. As a result, it consistently records strong trade surpluses with Western Europe, the United States, Russia, China, Asia, and Latin America. It currently ranks as the 4th largest global economy. France follows closely, benefiting from long-standing ties with its former colonies in Asia, Africa, the Pacific, and the Atlantic.

Following its victories over the German Second Reich in 1917, Nazi Germany and Imperial Japan in 1945, the United States emerged with a strong, secure, and resilient economy, at one point generating 50% of global wealth. It remains highly responsive to external events and the rise of other economies. With 35 million official immigrants, the U.S. maintains hegemonic influence over Western Europe, Canada, Australia, Japan, and New Zealand. Often seen as the world's banker and intellectual hub, America also suffers from

excessive credit-based consumption and is weighed down by astronomical public debt—ironically financed by the second-largest economy: China.

Fragile from within, the United States has adopted defensive positions against China and Mexico, two countries blamed for the loss of industrial jobs. The U.S. is now forced to reindustrialize, reduce its trade deficit, strive to maintain a GNP equal to 50% of global GDP, and alleviate its budget deficit. In short, America is determined to remain the eternal global leader by leveraging geoeconomics, geopolitics, economics, and political strategy—making geography and territorial expansion its driving forces. The world becomes its stage, and its desire for power is embodied in the Trans-Pacific Partnership Agreement (TPPA), signed by Australia, Canada, Japan, Mexico, New Zealand, Singapore, and Vietnam, aimed at countering China's economic rise.

Russia experienced a 7% growth rate between 2000 and 2008, driven by gas and oil revenues. Today, its economy remains weak, representing only one-fifth of China's economic power.

The latest and most intense economic battle now centers on rare and strategic metals essential to green technologies (such as trivium, palladium, borate, gallium, dysprosium, lithium) and electronic components. A real economic jungle is taking shape, and commercial peace continues to fade year after year.

In summary, the American nation was shaped by Europe—first by the Dutch, then predominantly by the British—following the emigration of millions of adventurers from Ireland, Italy, and Scotland. Its founding motto could be summed up as: "God and Gold." "America Forever" captures the essence of the United States' inescapable leadership, combining economic and financial power, military strength, soft power (universities and Hollywood), all in service of international trade.

C. Maritime Transport and International Trade

Maritime transport has evolved from sailing ships to the modern merchant fleet since the latter half of the 19th century and throughout the 20th. Transportation modes have undergone major changes over the last century. Maritime shipping shifted from tramp shipping—voyages made on-demand—to scheduled routes for transporting goods along precise timetables.

Containerization, an American invention, was first tested by the U.S. Army during World War II to ship supplies and equipment to Europe. The idea was later industrialized by Malcolm McLean (1913–2001), an American trucker, who introduced standardized 35-foot containers. Each container could support six stacked units and was easily handled at loading and unloading points using twist locks—devices located on the four corners of each container to secure, lift, and lower them. The current ISO standards were adopted in 1965, including the 20-foot container (TEU, or Twenty-foot Equivalent Unit). Container ship capacity has continued to grow and shows no sign of slowing. For instance, the MSC Tessa, the world's largest container ship, can hold 24,116 TEUs.

The importance of oil to all economies, the long distances between oil-producing and oil-consuming countries, and the oil shocks of the 1970s and 1980s all contributed to the construction of supertankers with capacities exceeding 500,000 DWT (Deadweight Tonnage). Bulk carriers have also grown in size, surpassing 400,000 tonnes.

As a result, the expansion of international trade and maritime transport has led to a transformation of the global productive and logistics space. Port-industrial zones (ZIPs) are not a new phenomenon. Located near major ports, they include vast steel and petrochemical complexes, often covering thousands of hectares, developed specifically to support global industrial flows.

1. The Maritime Environment

Before the advent of containerization, the maritime space was divided into three segments. The North Atlantic—linking Europe to the United States—was the most dynamic route. Other East-West routes, such as the Transpacific and Europe–Far East axes, were of lesser importance. After the rise of containerization in the 1960s, the maritime landscape underwent a complete transformation and became internationalized. Shipping lines from various countries joined forces in consortia to serve large and distant international markets.

China and the newly industrialized Asian nations established themselves as key players in international trade. Each East Asian country developed at least one container shipping company. Two major containerized sea routes originate in East Asia: The Transpacific route and the Europe–East Asia route. The North Atlantic route has since become secondary. South-South and North-South connections account for only 20% of total maritime traffic.

During the 1990s, European carriers—**Maersk Line, MSC, and CMA-CGM**—expanded to a global scale, operating on the three main routes as well as North-South connections, unlike most Asian carriers, which remained focused on their national markets. This created an oligopolistic container

shipping market. The top five global shipping companies held nearly 64% of the world's container transport capacity in 2018. Ports are now under pressure to modernize and adapt to accommodate increasingly large container vessels with a draft of around 20 meters.

International maritime transport takes advantage of fiscal, political, economic, and social benefits in less developed countries. A significant portion of the global fleet flies the flags of countries known for flag-of-convenience registration—such as Liberia and the Marshall Islands—and employs low-wage seafarers, mostly from developing countries, with Filipinos representing the majority. Among the **6,000** container ships capable of carrying **25** million twenty-foot containers at once, between **1,400** and **10,000** containers are lost at sea each year, according to the World Shipping Council (**WSC**), which represents the maritime transport industry. The future of maritime transport lies in smart navigation and digitalization. These two developments are expected to reshape port operations year after year. Maritime shipping is becoming highly digitized and automated, with numerous ship and port systems now interconnected via the Internet. Ultimately, a significant number of international maritime transport conventions have been developed under the auspices of **UNCTAD**.

2. The Global Merchant Fleet

As of 2021, the global merchant fleet—across all vessel types and major categories—consisted of 99,800 ships with a total carrying capacity of 2.13 billion DWT (Deadweight Tonnage). To meet growing global demand, newer, safer, more spacious, and environmentally friendly vessels are being built. **China, Japan,** and **South Korea** dominate the shipbuilding sector, accounting **for 90%** of global production—distributed respectively at **40%, 25%, and 25%.**

As of January 1, 2021, five countries—Greece, Japan, China, Singapore, and Hong Kong—held **52%** of the world's fleet by tonnage. The combined value of all vessel types from the top six ship-owning countries amounted to **490.34** billion USD, out of a total of **985.36** billion USD across the 25 top ship-owning nations.

Ship registration is generally done in so-called tax havens. Panama ranked first globally in 2021 with 7,980 registered ships valued at **134.55** billion USD, followed by the Marshall Islands with 3,942 ships valued at **103.39** billion USD. The top **ten** ship registration countries accounted for **33,197** ships, representing a total value of **702.09** billion USD in 2021.

3. Maritime Shipping Companies and Maritime Traffic

In recent years, the growth of international trade, coupled with the continuous increase in ship carrying capacity—particularly container ships—has led to a wave of mergers and acquisitions among maritime transport companies. Three major shipping alliances have emerged: the **2M alliance (**Maersk and MSC), the **Ocean Alliance** (COSCO, CMA-CGM, Evergreen), and **The Alliance** (ONE, Yang Ming, Hapag-Lloyd, HMM). These alliances dominate container shipping on major routes: 86.7% of Transpacific traffic, 91.5% of Transatlantic traffic, and 98.9% of Asia–Europe traffic.

The bulk of global containerized trade is carried on East-West trade routes: Asia–Europe (24.4 million TEUs), Transpacific (28.2 million TEUs), and Transatlantic (8 million TEUs), representing approximately 40% of global volume. Interregional routes mainly involve intra-Asian flows, which account for 27%. Consequently, container handling is concentrated in major ports, with Asian ports leading. Europe's top port, Rotterdam, ranks only 11th globally.

The rapid growth of maritime traffic has led to heightened competition and stronger pressure for service efficiency, driving investment in infrastructure and port services. The management of ports and terminals—given the massive investments required—has been delegated to specialized operators known for their expertise, capacity, and dynamism. Today, the two largest terminal operators in terms of container handling capacity are China COSCO Shipping and APM Terminals (Denmark).

To optimize operations, terminal operators have increasingly specialized terminals by type of cargo, improving handling performance. For greater efficiency, these operators have formed alliances, consortiums, and joint ventures—both among themselves and with shipping lines—to share berths and streamline port access.

4. Performance Indicators

The port connectivity index is based on several components. The port of Shanghai receives 10 container ships per day. Its impressive handling capacity reaches 68 million TEUs. A total of 68 shipping companies operates through the port of Shanghai, which maintains connections with 295 ports across 197 countries.

Port dwell time is a key metric for assessing operational efficiency and trade competitiveness. Liquid bulk carriers remain in port for durations ranging from 0.11 days in Peru

(ranked 1st) to 4.03 days in Kenya (151st globally). For dry bulk carriers, Singapore leads with just 0.12 days, while Sudan ranks last with 11.25 days (132nd). Container ships stay in port for periods ranging from 0.23 days in the Faroe Islands (1st) to 6.48 days in the Maldives (151st). General cargo carriers remain between 0.12 days in Guernsey (1st) and 13.99 days in Tuvalu (174th globally).

Combining both access and handling times, the Tanger Med port ranks 3rd globally, with less than one full day required for total port operations. U.S. ports rank among the lowest in terms of container processing times, particularly Savannah (4 days), Long Beach (6.6 days), and Los Angeles (9.6 days).

The long-term average freight rate for a 40-foot container between Asia and the U.S. West Coast was $1,500 prior to COVID. It reached $3,000 by December 1, 2021, and between $6,000 and $6,500 by October 2021. For 2022, the rate is estimated between $7,000 and $8,000. Notably, the per-TEU rate between China and South America rose from $2,000 in 2019 to $10,196 in December 2021.

Recently, Australia, Canada, New Zealand, the United Kingdom, and the United States have pooled their resources to adopt a zero-tolerance approach against unscrupulous cartels engaged in price-fixing. Ultimately, the war in Ukraine has disrupted and reshaped global supply chains. Buyers have been forced to turn to substitute markets—sometimes extremely distant—for vital commodities such as wheat, coal, corn, potash, and metals.

D. Currency and International Trade

1. The Pound Sterling

The pound sterling, currency of the United Kingdom, once circulated around the globe. It was accepted as an international currency in global trade throughout the 19th and early 20th centuries. The monetary system operated under the gold standard, which supported the globalization of international trade on a global scale, underpinned by free trade.

Most trading countries sought raw materials either regionally or across distant continents. Global trade was organized and centralized in London, which also dominated shipping (thanks to British naval supremacy) and maritime insurance.

Maritime logistics (fleets, ports, trading posts), backed by finance (banking system, stock exchange), a vehicle currency (the pound), and economic dynamism (industry, agriculture, trade)—all born from visionary thinkers and theorists—made the UK the epicenter of the world economy. Moreover, it enjoyed diplomatic and military supremacy.

From 1929 to 1944, the pound's dominance began to wane. The turning point may have been its appreciation, coupled with deindustrialization, widening current account deficits, and mounting difficulty maintaining its gold linkage—all exacerbated by an overvalued exchange rate that undermined the British economy.

2. The Dollar

The dollar's internationalization occurred rapidly. The shift from a British-centered to an American-centered global economy facilitated the monetary transition from the pound to the dollar. The two world wars benefited the United States: it financed World War I (1914–1918), becoming a creditor to the UK, France, Italy, and even Germany. These dollar-based loans generated financial gains and led to the transfer of British-held assets in the U.S. into American hands.

The expansion and massive use of the dollar in international trade accelerated after World War II, especially following the Bretton Woods Agreement in July 1944. Today's global economy revolves around the dollar, which dominates international transactions in North America, Asia, Africa, and Latin America. Other currencies remain on the sidelines, depending on the strategies pursued by their respective countries.

Dollar use varies internationally. This heterogeneity is illustrated by the following: europe is the least dollarized region due to the euro, some countries (e.g., Ecuador) use the U.S. dollar as official currency, most Latin American exports are dollar-denominated, despite government efforts to break free from dollar dominance. In Africa, the dollar dominates trade, though some monetary zones remain tied to currencies from former colonial powers. Russia uses the dollar for invoicing African trade in raw materials. In Asia, exports are also invoiced in dollars—84% in South Korea, 92% in Indonesia.

Dollar dominance is particularly strong in developing countries. However, in Japan—the world's fourth-largest industrial power—only 53% of exports are denominated in dollars. Japan thus has a vested interest in internationalizing its currency, the yen, especially across Asia and the Pacific.

3. The Euro

The euro was introduced in 2000 to address dysfunctions within the European Monetary System (EMS). One of its goals was to curb the dominance of strong European currencies—particularly the Deutsche Mark—and ultimately to establish a new international currency. However, since the euro is detached from a single political authority, all related

decisions and choices are often subject to discord and divergence within the eurozone, given the varying economic and monetary objectives pursued by European states.

At the international level, beyond Europe, the euro is only modestly used (about 6%) in EU trade with Asia, the Americas, and Oceania. Thus, we may conclude that the euro functions as a third-tier currency, behind the dollar and China's currency, the renminbi.

4. The Renminbi

China's achievements in production, international trade, trade surpluses, and economic growth have impressed the world for years. As the "factory of the world" and the leading global exporter of goods, China decided to internationalize its currency in 2009. This move followed the decision to allow Chinese exporters and importers to invoice their trade transactions in RMB. Currently, nearly 50 countries use the renminbi in international settlements.

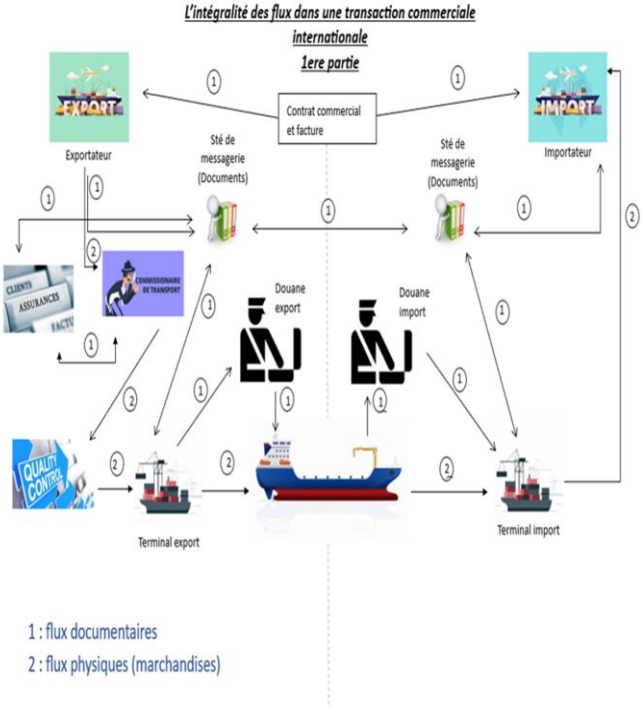
This expansion has been fueled by active promotion from Chinese authorities, who launched offshore RMB trading platforms in Hong Kong, Singapore, and Taipei. These are backed by a special, convertible offshore exchange rate that is more favorable than the onshore RMB rate. As a result, the RMB's international use soared to 24.8% in 2015, up from just 5.3% in 2010. This reflects China's broader aim to reduce its dependence on the dollar—and, by extension, on the United States.

China is perceived by its neighbors—and more broadly by Asia—as a regional hegemon. This geographic base provides a strong foundation for the renminbi's internationalization, despite continued dollar dominance. Nonetheless, despite these efforts, most of China's external trade is still conducted in U.S. dollars. In short, the internationalization of the RMB is underway and is expected to expand progressively over the long term. However, the United States is unlikely to yield ground without significant and painful concessions from China.

II. Trade Finance and International Commerce

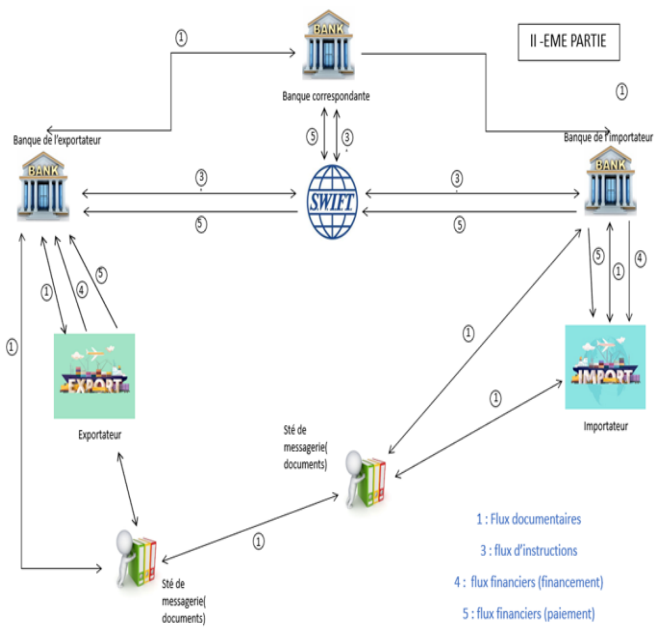
A. The Physical, Documentary, and Financial Flows in an International Trade Transaction

International trade, in its entirety, is characterized by the convergence of four major flows: physical flows, representing the actual movement of goods, documentary flows, concerning the documents that represent and accompany the merchandise, instruction flows, reflecting the buyer's and seller's terms and agreements, financial flows, involving payment, settlement, and financing mechanisms (including credit and signature-based commitments).



-a: The entirety of the flows in an international commercial transaction (first part) **-b:** Exporter **-c:** Importer **-d:** Commercial contract and invoice **-e:** Courier company (documents) **-f:** Courier company (documents) **-g:** Insurance company **-h:** Freight forwarders **-i:** Export customs **-j:** Import customs **-k:** Export terminal **-l:** Import terminal

-1: flow of documents **-2:** flow of goods.



II-(2nd part): -**a:** Correspondent bank -**b:** Exporter's bank -**c:** Importer's bank **-d:** Exporter -**e:** importer - **f:** Courier company -**g:** courier company.

1: Document flows **-2:** Flows of Instructions **-3:** financial flows (funding) **-4:** Financial flows (payment)

B. Scope and Mechanisms of Documentary Credit

1. General Overview

In a context marked by rising nationalism and latent protectionism disrupting the global trade system following World War I, the International Chamber of Commerce (ICC), founded in 1919, issued at its 7th congress the first **Uniform Customs and Practice for Documentary Credits (UCP)** in 1933. This was even though letters of credit as a payment method had already emerged in the 19th century. The issuance of this universal system was motivated by two main goals: to facilitate the physical flow of goods at the international level, and to counter the proliferation of conflicting national regulations governing letters of credit. Indeed, the multitude of contradictory national laws was creating legal confusion and commercial disputes among trading nations.

The UCP, first issued in 1933, has since undergone several revisions—in 1951, 1962, 1974, 1981, 1993, and 2006. The most recent version, **UCP 600**, was approved by the ICC's Executive Committee in November 2006 and entered into force on July 1, 2007. The UCP applies to all documentary credits, regardless of their forms or types.

An exporter may hesitate to begin production if they are not assured of payment, while the importer may hesitate to release funds before being certain that the shipment complies with the contract. These opposing interests between buyer and seller necessitate the involvement of a neutral intermediary: the bank.

In international trade transactions, the seller and buyer often use documentary credit as a method of payment. A **documentary credit** is a commitment by a bank (the issuing bank), acting on behalf of its client—the importer or applicant—or on its own behalf, to pay the seller (the beneficiary) the value of documents representing a shipment of goods or the provision of services, provided that the documents are strictly in conformity with the terms and conditions of the credit.

The parties involved in the documentary credit process are: The principal, the importer, the buyer. The beneficiary, the exporter, the seller. The issuing bank, the importer's bank. The notifying bank, the exporter's bank. The confirming bank, the bank that confirms the documentary credit. The designated bank with which the credit is enforceable. The confirming bank may also be the notifying bank if there is a correspondent relationship between the issuing bank and the confirming bank.

- Irrevocability means the cancellation or amendment of the terms and conditions of the documentary credit, with the agreement of the issuing bank, the confirming bank and the beneficiary.

- The documentary credit must stipulate certain important dates: The issue date of the documentary credit. The expiry date of the validity period. Shipment deadline within the validity period. Deadline for presentation of documents, prior to the shipment deadline.

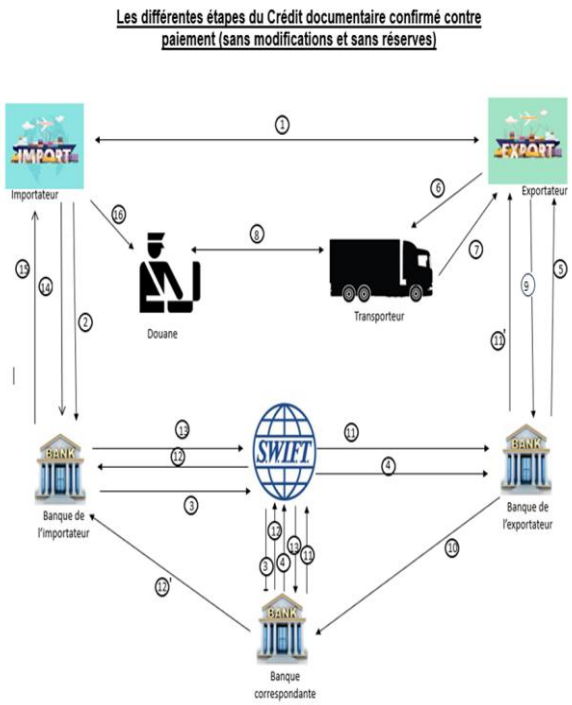
The UCP lists 4 types of availability for documentary credit: Payment at sight: payment is made as soon as the documents are handed over, provided the terms and conditions of the credit are respected. This is the simplest and fastest formula. Deferred payment: The seller grants the buyer a period of payment not evidenced by the drawing of a bill of exchange. If the documents comply with the terms and conditions of the documentary credit, the designated bank will pay the seller on the due date. Payment by acceptance: A bill of exchange drawn on the buyer is accepted by the issuing bank, which will honor it at maturity. If the credit is unconfirmed, the bill of exchange will be accepted by the issuing bank or the bank designated by it; if the credit is confirmed, the confirming bank will accept the bill of exchange signed by the exporter

and pay it at maturity. Payment by Negotiation: Commitment by the bank to discount, without recourse, the documents presented by the beneficiary (exporter).

Notification is the transmission of documentary credit messages and information; it does not entail any commitment on the part of the notifying bank to perform services until it has notified and confirmed

Confirmation is a firm commitment by a third-party bank to honor the presentation of documents in accordance with the terms and conditions of the documentary credit, by sight payment, deferred payment, acceptance or negotiation. It's an insurance, a great security for the export.

We present an outline of the various stages of the confirmed documentary credit against payment, without any amendments or reservations. (in theory)



a: The different stages of a confirmed letter of credit against payment (without modifications and without reserves) **b:** Importer **c:** exporter **d:** Customs **e:** Carrier **f:** Importer's Bank **g:** Exporter's bank **h:** Correspondent bank**.**

1. Commercial Contract **2.** Application for Opening a Sight Documentary Credit **3.** Transmission of the Opening Advice for the Documentary Credit (CREDOC) **4.** Transmission of the Opening Advice with Documentary Credit Confirmation **5.** Notification of the Confirmed Documentary Credit **6.** Delivery of Goods to the Carrier for Shipment **7.** Collection of the Transport Document (e.g., Bill of Lading) **8.** Shipment of the Goods **9.** Presentation of Documents **10.** First Document Check – If Compliant, Forwarding of Documents **11.** Second Document Check – If Compliant, Payment is Made (Exporter's Bank Account Credited by the Confirming Correspondent Bank), Payment to the Exporter **12.** Debiting the Importer's Bank Account Held at the Confirming Correspondent Bank – Forwarding of Documents **13.** Third Document Check – If Compliant, Debit Is Covered by Credit of Its "Nostro" Account **14.** Debiting of the Importer's Account **15.** Delivery of Documents to the Importer **16.** Customs Clearance of Goods with Documents Proving Completeness, Conformity, and Consistency

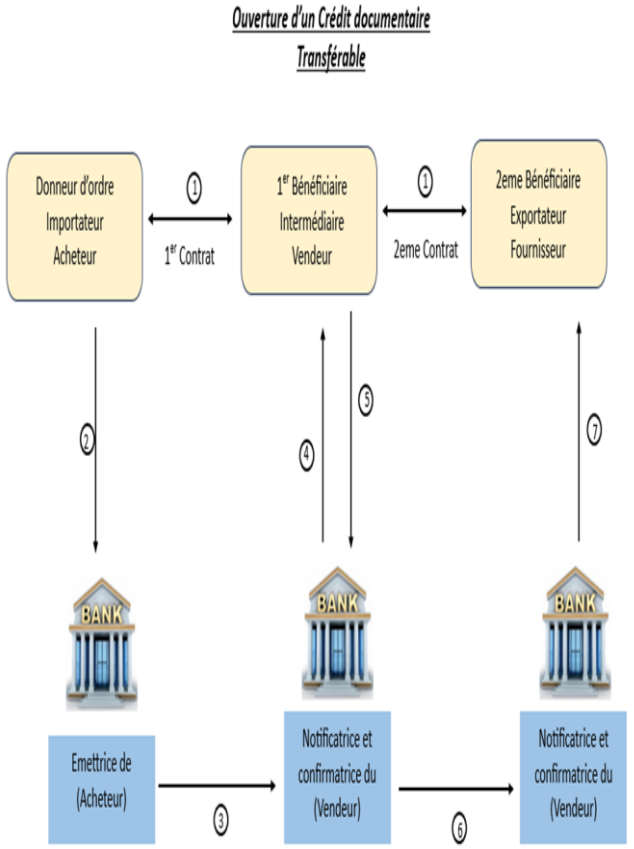
2. Special Documentary Credits with Specific Structures

The diversity of international commercial operations involving brokers, traders, freight forwarders, and merchants between actual suppliers or producers and the final buyers has given rise to various forms of documentary credits.

a. Transferable Documentary Credit:

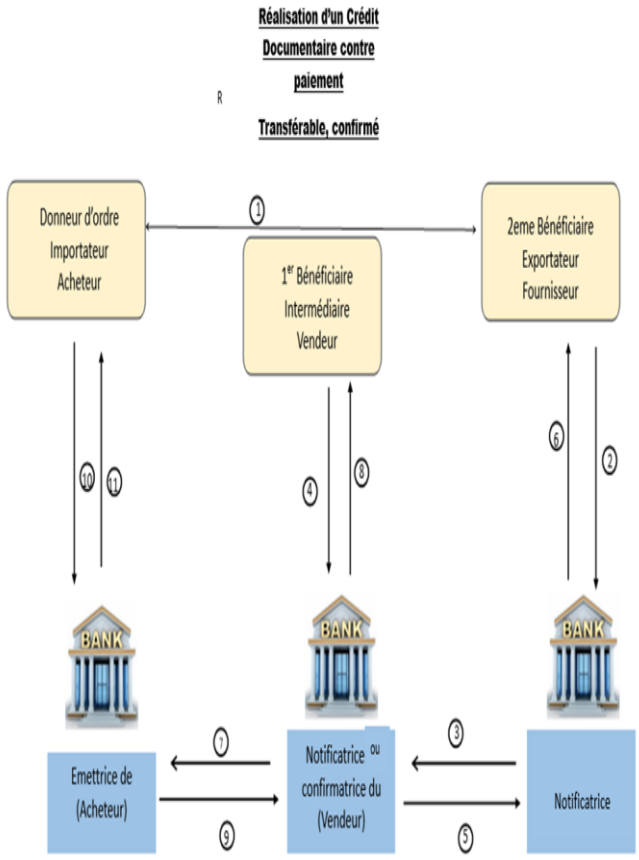
This process is initiated by an intermediary who signs a contract with the buyer and receives a documentary credit as the **first beneficiary**. The intermediary then requests their bank to **transfer part or all of the credit to one or more second beneficiaries**, who are the actual suppliers.

The **transferability clause** must appear explicitly on the documentary credit issued by the applicant, i.e., the final buyer. In this context, we deal with a **subsidiary documentary credit** (from the 1st beneficiary to the 2nd beneficiary), stemming from the initial documentary credit issued by the final buyer in favor of the first beneficiary. These two credits are **legally linked**.



(a): Opening of a transferable letter of credit **(b):** applicant/ Importer/ Buyer **(c):** First beneficiary/ Intermediate party / seller **(d):** Second beneficiary / exporter / supplier **(e):** issuing bank **(f):** notifying and confirming bank **(g):** notifying and confirming bank

1. First contract signed between the final buyer and the first beneficiary; second contract concluded between the first beneficiary and the second beneficiary. **2.** Request to open a transferable documentary credit with the bank of the first beneficiary. **3.** Opening of the transferable documentary credit, and its transmission to the advising or confirming bank. **4.** Transmission of the authenticated and/or confirmed message to the first beneficiary. **5.** Request to transfer the credit to the second beneficiary, with the possibility of reducing the amount, modifying the shipment period, etc. **6.** The advising or confirming bank transmits the transferable documentary credit to the bank of the second beneficiary. **7.** Transmission of the authenticated and/or confirmed message to the second beneficiary.



(a): The realization of a confirmed, transferable letter of credit against payment **(b):** applicant **(c):** 1st beneficiary/ Intermediate party/ seller**(d):** 2nd beneficiary/ Exporter/ Supplier **(e):** issuing bank**(f)**: notifying or confirming bank **(g)**: notifying bank

1. Shipment of goods directly from the supplier (second beneficiary) to the buyer **2.** Presentation of documents by the supplier (second beneficiary) to their bank **3.** Transmission of documents after verification of compliance, with a request for payment **4.** Notification to the first beneficiary of receipt of compliant documents, and request to submit their own invoice and the required documents **5.** The first beneficiary's bank pays the second beneficiary's bank **6.** Payment to the second beneficiary **7.** After verifying the compliance of the documents received from the second beneficiary's bank, the first beneficiary's bank may substitute the invoice and documents received with those provided by the first beneficiary, and forwards them to the issuing bank **8.** The first beneficiary's bank credits their client with the difference between the invoice received and the invoice issued, while handing over the documents provided by the first beneficiary **9.** Payment of the documentary credit to the first beneficiary's bank **10.** Debit of the buyer's account **11.** Delivery of

documents to the buyer after verification of their compliance by the buyer's bank

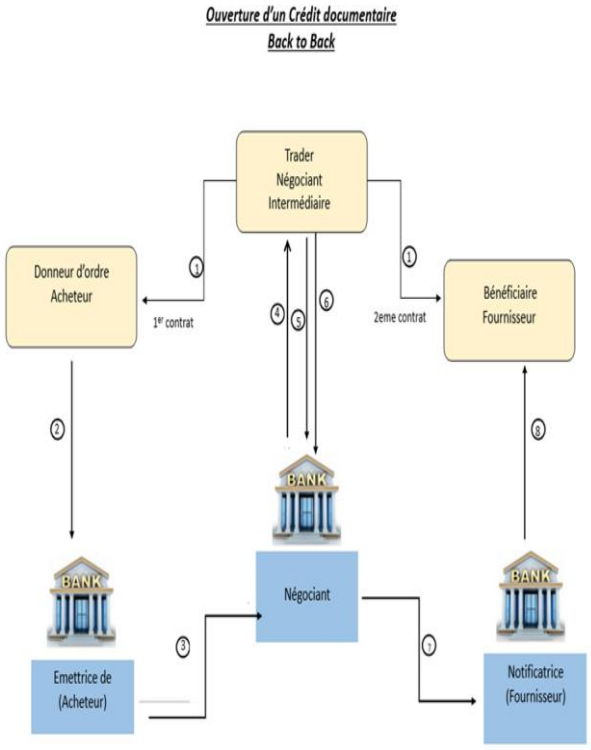
b. Back-to-Back Documentary Credit:

When the buyer refuses to issue a transferable credit, they may instead issue an **import documentary credit** in favor of a trader or intermediary. This constitutes an **export credit** for the intermediary.

The intermediary then opens another **import documentary credit** in favor of the actual supplier, which, for the supplier, functions as an **export credit**.

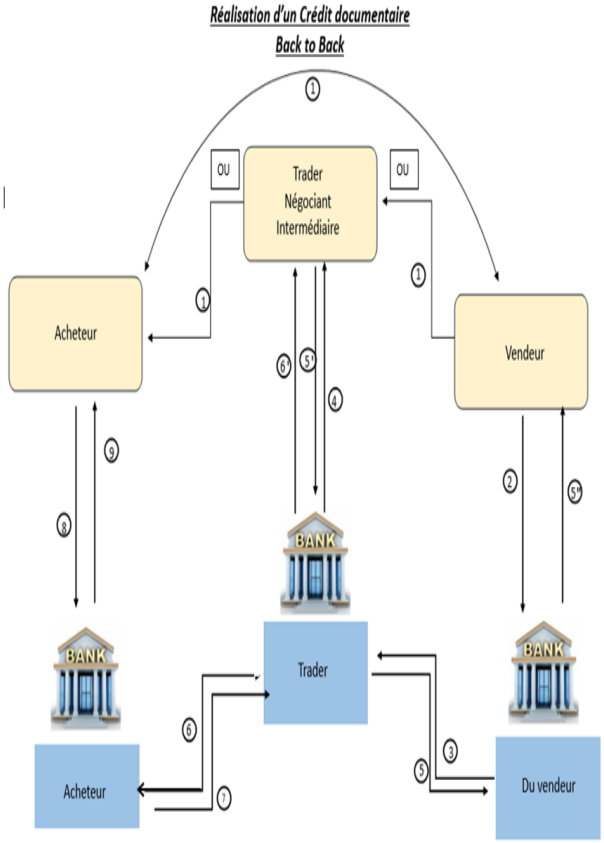
In this case, the two documentary credits are **legally distinct**. The back-to-back credit is in fact an **import documentary credit backed by an export documentary credit**. It is typically used when the intermediary is merely a commission agent. The proceeds from the export credit are used to cover the import credit, plus a profit margin retained by the intermediary.

In practice, the international trader involved in a **back-to-back documentary credit** buys and sells the **same goods without them transiting through the trader's country**. The goods are shipped **directly from the supplier's country to the buyer's country**.



(a): Opening of a Back-to-Back letter of Credit **(b):** Applicant/buyer **(c):** Trader/ Intermediate party **(d):** Beneficiary/ supplier **(e):** issuing bank **(f):** Merchant's bank **(g):** Notifying Bank.

1. First contract signed between the final buyer and the trader, specifying that a documentary credit will be opened by the trader's bank. Second contract signed between the trader and the supplier, stipulating that payment will be made through a documentary credit. **2.** Application for the issuance of a confirmed documentary credit submitted to the trader's bank. **3.** Issuance of the initial documentary credit by the trader's bank. **4.** Transmission of the credit message to the trader. **5.** Request to open a back-to-back documentary credit in favor of the supplier. **6.** The bank prepares the back-to-back credit, independently of the primary documentary credit, and this requires a credit facility to be established along with specific issuance conditions. **7.** Issuance of the back-to-back documentary credit and transmission to the advising bank. **8.** Transmission of the documentary credit to the supplier.



(a) realization of a Back-to-Back letter of Credit **(b)** Buyer **(c)** Trader/intermediate party **(d)** seller **(e)** buyer's bank **(f)** Trader **(g)** seller's bank.

1. The seller may ship the goods directly to the buyer without going through the trader, or ship them to the intermediary, who will then forward them to the buyer. The first case is the most common. **2.** Presentation of documents to the bank. **3.** Verification of compliance with the terms and conditions of the back-to-back documentary credit, and transmission to the intermediary's bank with a request for payment. **4.** Forwarding of the documents to the intermediary, with a request to submit the invoice and, if necessary, additional documents. **5.** The intermediary's bank pays the seller's bank. **5'.** The intermediary's bank debits the intermediary's account held with it. **5''.** The seller's bank credits the supplier's account. **6.** After replacing the invoice and possibly adding other documents, the intermediary's bank sends the documents to the buyer's bank, requesting payment. **6'.** The intermediary's bank credits the account of its client (the intermediary). **7.** The buyer's bank pays the intermediary's bank after verifying compliance of the documents. **8.** The issuing bank debits the buyer's account held in its books after verifying compliance of the documents. **9.** The issuing bank releases the documents to its client (the buyer).

c. "Red clause" documentary credit:

This credit includes a special red clause authorizing the notifying or confirming bank to make an advance payment against the realization of the credit. This advance is granted to the beneficiary before presentation of the documents. It is financing authorized by the principal within the framework of this CREDOC, on which the issuing bank undertakes to reimburse the notifying or confirming bank in the event of non-fulfillment of the credit. Initially, the amount of the advance was 10% of the amount of the documentary credit; today, the Red Clause can cover the entire credit.

d. Revolving documentary credit:

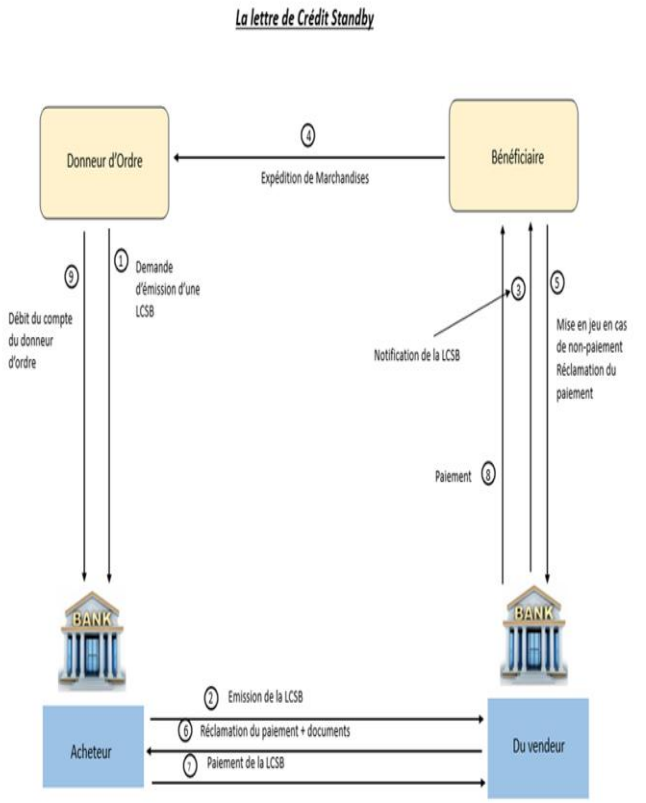
Instead of opening a documentary credit for each international trade transaction, the buyer and seller opt to open a single revolving documentary credit for the same initial amount, at a frequency determined at the outset. This type of credit can be moderately costly and enables the buyer to obtain supplies on a regular basis in quantities that do not constitute a real stock, which would be a financial drain on his cash flow.

e. Stand-by letter of credit L.C.S. B:

This is an undertaking by a bank (issuing bank) on behalf of the principal (importer), in favor of the beneficiary (exporter), to pay the latter the amount of the commercial transaction determined in the event of default by the buyer, on presentation of documents (copies) conforming to the terms and conditions of the LCSB. It is therefore more of a documentary guarantee than a true documentary credit. The LCSB will only be realized if the importer fails to meet the agreed payment on the date specified in the letter of credit

Nevertheless, as the original documents have already been sent to the importer for customs clearance of the goods, it is sufficient for the exporter who has not been paid by the importer to send the guarantor bank (the principal's bank) copies of the documents, such as : Copy of the invoice relating to the transaction, non-negotiable copy of the bill of lading, declaration by the exporter that he has not been paid. Etc.

On receipt of these copies, the originator's bank pays the beneficiary through its bank.



(a) The Standby letter of Credit **(b)** Applicant **(c)** Beneficiary **(d)** Buyer's Bank **(e)** seller's bank.

(1) Request for issuance of a Standby letter of credit **(2)** Standby letter of credit issuance **(3)** Standby letter of credit notification **(4)** Shipment of goods **(5)** Drawing under the standby letter of credit in case of non-payment **(6)** Demand for payment and documents **(7)** Payment under SBCC **(8)** Payment **(9)** Debiting the account of the applicant

3. Documentary Credit Practice

Overview of the process involving documentary and financial flows related to an international transaction financed by a letter of credit.

A. Preliminary Phase

1. Contract / Paper: Importer ↔ Exporter

2. Fax: The commercial contract is signed by both parties. A pro forma invoice aligned with the contract is sent.

3. Document / Paper vs Fax: Importer ⟶ Freight Forwarder

Submission or transmission of the pro forma invoice and possibly a copy of the commercial contract for the **pre-registration of the import license.**

4. Online Entry: Freight Forwarder ⟶ PortNet / Ministry of Foreign Trade (MCE)

Pre-registration of the import title via the PortNet one-stop platform, and possible forwarding to the MCE for approval when the goods require a visa (import license or prior import declaration).

5. Online: PortNet ⟶ Importer's Bank

The pre-registered title, with or without the MCE visa, is sent online to the bank for official registration (domiciliation).

B. Outbound Phase

6. Document / Paper vs Fax: Importer ⟶ Importer's Bank

The importer requests the opening of a letter of credit (L/C) in favor of the exporter.

7. SWIFT MT700: Importer's Bank ⟶ Correspondent Bank

Following domiciliation and verification of the credit authorization or after the importer deposits an amount exceeding the invoice value (plus fees and commissions), the bank sends the L/C opening to its foreign correspondent, requesting confirmation. Instructions are embedded in the SWIFT MT700 message.

8. SWIFT: Correspondent Bank ⟶ Exporter's Bank

The MT700 message is forwarded to the exporter's bank.

9. Document / Paper / Fax: Exporter's Bank ⟶ Exporter

The exporter's bank, referred to as the "Advising Bank", notifies the exporter of the credit.

Upon receiving the MT700 copy, the exporter matches the credit terms with the signed commercial contract.

10. Fax: Exporter ⟶ Importer

If the exporter does not accept certain provisions of the MT700, they must contact the importer to request modifications. Any changes must follow the same process:

11. Document / Paper vs Fax: Importer ⟶ Importer's Bank

The importer submits requested amendments to the L/C.

12. SWIFT MT707: Importer's Bank ⟶ Confirming Correspondent Bank

Transmission of the requested modifications.

13. SWIFT MT207: Confirming Bank ⟶ Exporter's Bank

The modifications are forwarded to the exporter's bank.

14. Document / Paper / Fax: Exporter's Bank ⟶ Exporter

The modifications are communicated to the exporter.

Once received, the exporter begins production or dispatches the already-prepared goods through a freight forwarder to the importer's country, while preparing the required documents.

C. Return Phase

15. Documents / Paper: Exporter ↔ Exporter's Bank

Submission of the documents required under the terms of the L/C by the exporter.

16. Rejection of Documents
The bank verifies the documents for compliance, completeness, and consistency. If irregularities are found, the documents are returned to the exporter for correction.

17. Documents / Paper: Exporter ⟶ Exporter's Bank

Resubmission after correction of the identified anomalies.

18. Documents / DHL: Exporter's Bank ⟶ Confirming Correspondent Bank

Transmission of the verified documents to the confirming bank, which performs a thorough review for any discrepancies.

19. SWIFT MT734: Confirming Bank ⟶ Exporter's Bank

Notification of discrepancies to the exporter's bank.

20. Fax: Exporter's Bank ⟶ Exporter

The exporter is notified of the discrepancies.

21. Documents / DHL: Confirming Bank ⟶ Importer's Bank

If the documents are fully compliant, they are sent to the importer's bank, which must also verify them according to the 3Cs (Compliance, Consistency, Completeness).

22. Accounting Entry / SWIFT: Confirming Bank ⟶ Exporter's Bank

The confirming bank credits the exporter's bank and informs it.

23. Accounting Entry / SWIFT: Confirming Bank ⟶ Importer's Bank

Debits the Nostro account of the importer's bank and requests settlement of the resulting debit.

24. SWIFT MT734: Importer's Bank ⟶ Confirming Bank

If discrepancies are found, the importer's bank notifies the confirming bank.

25. Fax / SWIFT: Importer's Bank ⟶ Confirming Bank

Requests reversal of the debit entry from its Nostro account.

26. Fax / SWIFT: Confirming Bank ⟶ Importer's Bank

In most cases, the confirming bank replies that the discrepancies are immaterial.

27. Fax / SWIFT MT734: Confirming Bank ⟶ Exporter's Bank

Notifies the exporter's bank of the discrepancies raised.

28. Fax: Exporter's Bank ⟶ Exporter

Requests the exporter to contact the importer to resolve the issues.

29. Fax: Exporter ⟶ Importer

Exporter contacts the importer to lift the reservations.

30. Fax or Hard Copy: Importer ⟶ Importer's Bank

Provides a letter stating the discrepancies are waived.

31. SWIFT MT202 Transfer: Importer's Bank ⟶ Confirming Bank

Notifies the lifting of discrepancies and processes the fund transfer.

32. Paper Documents: Importer's Bank ⟶ Importer

Debits the importer's account and delivers the documents for customs clearance, keeping a copy for settlement of the import file.

Ultimately, it becomes evident that from **step 6** (request to open the letter of credit) to **step 9** (receipt of the L/C by the exporter), the process is relatively smooth. However, when modifications to the terms of the credit are involved, the process becomes more complex extending from 4 steps to 9 steps during the outbound phase (from step 6 to step 14).

The **return phase** starts with the exporter submitting the documents to their bank at **step 15** and ends with the delivery of said documents to the importer at **step 32**, involving **18 procedural steps**, particularly due to discrepancies and reservations raised by the three involved banks.

Respecting the **3 Cs**—**Compliance**, **Completeness**, and **Consistency**—by the exporter can reduce the return process to **7 steps** instead of 18, and the overall process (outbound and return phases) to **11 steps** instead of 27.

III. Risks of Standard International Banking Practices and Digitalization

A. Standard International Banking Practices

Standard International Banking Practices (SIBPs) are a set of norms and guidelines issued by the **International Chamber of Commerce (ICC)** that outline the best practices for international banking transactions involving letters of credit. These standards provide directives for the drafting, submission, examination, and processing of documents related to L/Cs by issuing banks, intermediary banks, and beneficiaries.

SIBPs are widely regarded as the reference framework for international trade professionals, ensuring uniform treatment of L/Cs and reducing risks for all parties involved.

The international standard **SIBP** is considered the **most recent benchmark** for evaluating documents related to letters of credit, aligned with practices approved by ICC national committees. It also serves as a guide for beneficiaries in preparing and submitting documents to designated or issuing banks.

1. The MT700 Message: The Backbone of the Letter of Credit

The **MT700** is a structured message consisting of coded fields that require a deep understanding of documentary credit mechanisms by users, banks, and beneficiaries. The key Fields include:

- **27: Sequence** – Example: 1/1
- **40A: Form of Documentary Credit** – "Irrevocable" by default; may include options like "Transferable" or "Stand-by."
- **20: L/C Number** – The reference number issued by the issuing bank, which must appear on all documents and instructions.
- **23: Pre-advice of Issuance and/or Amendment** – Sent by the issuing bank at the request of the applicant.
- **31C: Date of Issuance of the L/C** – Format: DDMMYY (e.g., 160124 for French format or 240116 for English).
- **40E: Rules and Uniform Practices** – Example: UCP 600.
- **31D: Expiry Date and Place of the L/C**
    - Required documents must be presented no later than this date; failure to comply constitutes a discrepancy. In such cases, the documents may be processed under documentary collection rules (URC 522).
    - The **expiry place** is the final location where documents must be submitted by the expiry date.
    - **Note:** Do not confuse the *expiry place* with the *place of L/C availability*.
- **51D: Applicant's Bank** – Full name and address.
- **51A: SWIFT Code of Applicant's Bank -** Example: BCPOMAMCXXX.
- **50: Applicant -** Name and address of the importer.
- **59: L/C Beneficiary -** Name and address of the exporter.
- **32B: Amount and Currency -** Example: GBP 150,000. This amount typically reflects the contract value. It may be reduced for a first partial shipment, followed by additional shipments, or may represent the remaining balance after an advance payment made outside the L/C.
- **39A: Amount Specification, Tolerance:** This field specifies if a tolerance on the amount is allowed, e.g., ±5%.
- **39B: Maximum L/C Amount: This amount must not be exceeded under any circumstance.**
- **39C: Other Covered Amounts:** Details any additional amounts covered, if applicable.
- **41A: Valid at (Bank) by (payment method):** This field designates the bank to which the documents must be remitted for CREDOC to be carried out.
    - If the L/C is confirmed, this field typically names the confirming bank, which must check the documents and make payment if they are in order.
    - If unconfirmed, the issuing bank may designate its own branches, the advising bank (typically the exporter's bank), or any bank (e.g., a subsidiary) to realize the L/C.
    - This field also specifies the method: e.g., "Sight Payment."
- **41D: Available With… By (Deferred/Acceptance/Negotiation/Mixed Payment)** E.g., Available with Commerzbank by deferred payment or acceptance, or negotiation.

- **42C: Draft Type** E.g., 60 days from the B/L (Bill of Lading) date.
- **42D: Drawn On** E.g., Drawn on Issuing Bank.
- **42P: Deferred Payment Terms** E.g., Deferred payment 60 days from B/L date (linked with field 41D).
- **42M: Mixed Payment Terms** E.g., 30% at sight, 70% 45 days after B/L date.
- **43P: Partial Shipments** - Indicates if allowed ("ALLOWED") or not ("NOT ALLOWED").
- **43T: Transshipment** - States whether permitted or prohibited. Transshipment involves unloading and reloading goods onto another vessel during their transport from the place of shipment to final destination.
- **44A: Place of Taking in Charge** - Initial point of dispatch.
- **44E: Port of Loading / Airport of Departure** - Reserved for sea or air shipments.
- **44F: Port of Discharge / Airport of Destination**
- **44B: Final Destination** - Final location for delivery of goods**.**
- **44C: Latest Shipment Date** - E.g., January 16, 2024 (formatted as 160124 in French or 240116 in English). Must be strictly respected.
- **44D: Shipment Period** - Specifies the time frame for shipment. Watch out for phrases like:
  "At least X days before…", "No later than X days after…", "Within X days of…", "Beginning/middle/end of the month", "Until", "Since", "First half", "Second half", "Immediately", "As soon as possible", etc.
- **45D: Description of Goods** - Must match exactly the terms in the commercial contract. May refer to invoice number and date. Quantity must be declared. Avoid vague terms like "approximately"—if used, ±10% variation will be tolerated.
- **46A: Required Documents** - All documents required by the importer's country for customs clearance.
- **47A: Additional Conditions** - Includes terms such as incoterms, insurance, shipment mode (deck vs. containerized), L/C reference, and specific conditions on issuing bank fees.
- **71B: Charges** - Indicates how costs are split between applicant (importer) and beneficiary (exporter). Generally, charges incurred outside the issuer's country are borne by the exporter.
- **48: Period for Document Presentation** - Specifies the time allowed to present documents to the bank that will realize the L/C.
- **49: Confirmation Instructions** - Typically, the issuing bank sends the MT700 to its branch or correspondent to add confirmation, or to the advising bank with instructions either to refrain from confirming or "MAY ADD" if the beneficiary requests confirmation.
- **53A: Reimbursing Bank (SWIFT Code)**
- **53D: Reimbursing Bank (Full Name and Address)** - The issuing bank maintains a "nostro" account with a foreign bank in the exporter's country and provides instructions for reimbursement of payments made by the paying bank.
- **78: Instructions for Disbursement** - Indicates the address where documents should be sent.
- **57A: Second Advising Bank** - May be a branch or correspondent of the issuing bank, notified via SWIFT code.
- **57D: Full Name and Address of Advising Bank**
- **72: Bank-to-Bank Information** - Reserved for interbank correspondence.

2. Advantages and Limitations of Letters of Credit

a) Advantages of Letters of Credit:

1. **Payment Security**: Offers guaranteed payment to the seller, reducing non-payment risks.
2. **Trust Between Parties**: Strengthens confidence between buyer and seller, as the seller is assured of payment upon presenting compliant documents.
3. **Widely Used in International Trade**: Facilitates global commerce between distant jurisdictions.
4. **Credit Risk Mitigation**: The issuing bank assumes credit risk, benefiting both buyer and seller.

b) Limitations of Letters of Credit:

1. **Complexity**: The procedures and required documentation can be complicated, especially for large transactions.
2. **Costs**: The costs associated with setting up and executing an L/C can be high, including banking and administrative fees.
3. **Rigidity**: Letters of credit are sometimes viewed as rigid instruments. Modifying their terms and conditions can be difficult once issued, as L/Cs require a high level of formality and strict adherence to clauses and deadlines.
4. **Risk of Non-Compliant Documents**: The seller must ensure that all documents presented conform strictly to the L/C terms or face the risk of non-payment.
5. **No Guarantee of Goods Quality**: The L/C ensures payment—not the quality of the merchandise.
6. **Goods Immobilization**: If the buyer does not take delivery, goods may be stuck in transit, increasing the risk of haggling or negotiation.

B. Risks Related to Letters of Credit for Banks

1. Risks Associated with International Operations:

Risk is defined as "the uncertainty surrounding results and potential losses when environmental developments are adverse." It can also be seen as a foreseeable or unforeseeable danger.

International trade involves various uncertainties, exposing both importers and exporters to multiple types of risk. These include counterparty risk, performance risk, ethical risk, foreign exchange risk, fraud risk, regulatory or compliance risk, strategic risk, reputational risk, country risk, technical risk, economic risk, financial risk, quality risk, manufacturing risk.

2. Operational Risks Related to the L/C Process:

Operational risk stems from weaknesses in the L/C issuance procedures or administrative follow-up, including:

- **Documentary Risk**, such as:
  - Mismatches between the data on documents and the actual goods shipped
  - Non-conformity of the L/C with the commercial contract
  - Lack of precision in contract conditions
  - Failure to verify documents properly at issuance, amendment, or execution
- **Payment delay risk**: Even with an L/C, payment may be delayed due to longer-than-expected verification or processing or while awaiting discrepancy resolution
- **Fraud risk**: Potential fraud from buyers or issuing banks (e.g., document falsification, unjustified refusal to pay)
- **Non-delivery risk**: Goods may be stolen, damaged during shipment, or cleared in the wrong country due to customs errors.
- **Process breakdowns**, such as:
  - Delays in processing documents
  - Lost documents
  - Incomplete document checks
  - Errors in L/C terms or vague instructions
  - Failure to follow instructions by correspondent banks.
  - Missing provisions or incorrect Currency
  - Omission of commission or provision collection
  - Fake export operations
  - Delays in document handover

- Unsigned payment orders
- Client not informed of document receipt.
- Discrepancies in documents not communicated to the client

Example of Transport-Related Risks (which may pose indirect risk to the bank):

- Delays in loading/unloading
- Goods non-compliance (damaged, wrong quantity/quality)
- Handling damage
- Total ship loss (e.g., storm, fire)
- Partial or total theft during transit
- Road or rail transport accidents

C. Documentary credit risk management systems

1. Internal Control of the Documentary Credit Process

- **Import Domiciliation**: *Documentary risk*: Non-compliance between the pro forma invoice and the import commitment.
- **Request to open a Documentary Credit (CREDOC)**: *Documentary risk*: Verification of the opening request, pro forma invoice, and import document.
  Financial or funding risk: Incorrect account debiting / Failure to collect fees.
- **CREDOC Issuance (Agency level)**: *Risk*: Failure to follow document verification procedures (e.g., signatures, data accuracy).
- **CREDOC Issuance (Currency Control Unit)**: *Risk*: Data entry errors, processing delays, failure to apply customer-requested amendments, non-compliance with client instructions.
- **Receipt and Physical Verification of Documents**: *Risk*: Document loss.
- **Sending Documents to the Agency**: *Risk*: Delays or document loss.
- **Reception of Documents by Agency**: *Risk*: Loss or theft, client agency error.
- **Delivery of Documents to Client**: *Risk*: Delay in notification, penalizing the client if the provision is not returned with correct value date.

2. Operational Risk Management Mechanism for Documentary Credit

Banks must implement robust mechanisms to manage risks, such as:

- A **strong internal control environment**, which is key to security and sustainability.
- **Identification and evaluation** of operational risks, allowing the bank to assess its exposure and map risk areas.
- **Key Risk Indicators (KRIs)**: Quantitative, rational metrics used to monitor specific risks, acting as early warning signals.
- **Monitoring and evaluation** of the CREDOC mechanism: Categorizing risks as unacceptable – moderate – low.

3. Tools for Managing Operational Risks in Documentary Credit

- **Strict control** and clearly defined responsibilities.
- **IT systems**: Applications equipped with control functions and automated alerts for data inconsistencies.
- **Information systems**: A knowledge base enriched with internal circulars and standard operating procedures.
- **Staff training**.
- **Deadline tracking and process management**.

D. Improvement Pathways and Recommendations

Implement a blockchain-based system to reduce processing times and costs and provide transparency and visibility to all stakeholders involved in a documentary credit transaction.

Introduce push notifications to inform the documentary credit issuer of document receipt through automatic alerts on the banking app (e.g., DRAFT MT700).

Deploy OCR (Optical Character Recognition) technology to extract data from opening documents, simplifying data retrieval.

1. For Clients

Enhance clarity and communication: Simplify procedures and document requirements, improve communication, and offer educational resources.

Improve efficiency and speed: Develop an online platform, automate processes, provide real-time tracking options.

Reduce costs and risks: Explore more competitive pricing options, strengthen risk management measures, offer insurance and guarantee options.

Improve customer satisfaction: Enhance staff training, gather and analyze customer feedback, offer multilingual customer support.

2. For Banks

Improve communication and understanding of documentary credit: Simplify documentation, develop educational materials, and provide multilingual communication.

Increase service efficiency and speed: Implement an online platform, automate processes, and provide real-time tracking.

Strengthen risk management and client protection: Set up robust risk management procedures, offer guarantees and insurance, enhance document verification and compliance checks.

Boost customer satisfaction and user experience: Train staff, collect client feedback, and provide responsive and accessible customer service.

Address client-specific concerns: Offer competitive pricing, shorten processing times, and improve fee transparency.

IV - Digitalization in the Service of Trade Finance

Trade Finance boasts significant strengths, notably in terms of global expertise and proven experience, the design of diversified products tailored to meet the vast majority of exporters and importers' needs, and the profitability of its fees and commissions.

However, it suffers from numerous weaknesses due to manual and paper-based procedures, legal complexity, the proliferation of national and international regulatory frameworks, fierce competition among financial institutions targeting the high-value exporter/importer segment, and the many risks—numbering around forty—embedded in international trade.

Opportunities lie in the growing interest in process digitalization at all levels, the expansion of international trade, the increased emphasis on port logistics, and the rising demand and supply of international financing solutions.

Threats include the volatility of order books, which directly affects international trade financing, and the setbacks experienced by trade communities in countries lagging behind in digitizing trade and financial documents related to cross-border transactions.

The dematerialization of international trade documentation is underway, evidenced by the establishment of single-window systems in various countries, streamlined customs clearance through digital declaration procedures for vessels and cargo in certain ports, and the creation of platforms to facilitate the use of electronic documents in international operations.

This hybrid model—where the document flow is partly digitized but procedures remain manual—makes financing instruments particularly complex due to the high risk of errors. It also hinders businesses' access to international trade finance and leads to the immobilization of goods in ports, pending document arrival—especially in short-distance exports—and is exacerbated by a lack of qualified personnel in international operations.

Expected savings are estimated at over USD 5 billion annually through the adoption of electronic bills of lading. According to McKinsey (2022), digitizing bills of lading alone could generate USD 16 billion in benefits for maritime transport and boost global trade by an additional USD 40 billion.

Promising initiatives include:

- A digital promissory note transaction executed by Lloyds Bank in the UK, which reduced processing time from several days to just a few hours.

- Major shipping companies such as Maersk, MSC, CMA CGM, Hapag-Lloyd, and ONE have committed to adopting electronic bills of lading by 2030.

Beyond electronic signatures, the digitalization of trade documents must also focus on standardizing and harmonizing digital formats. This means establishing a set of shared standards, legal frameworks, and technological protocols—preferably via blockchain—accepted and used by all stakeholders.

The rise of the internet and modern information and communication technologies has enabled collaborative work across international organizations, companies, and stakeholders.

Collaborative work has been redefined along the global supply chain thanks to blockchain, which facilitates disintermediation, automation, and centralized, verified, and secure information sharing among trusted partners within the chain.

Blockchain offers numerous economic advantages, including:

- Data Security and certification

- Authentication and traceability of transported goods

- Historical insight into assets being purchased

- Combatting counterfeiting, smuggling, and fraud, notably through applications like Thing Chain and Block verify

- Automation, efficiency, and cost/time reduction

From a technological standpoint, a key maritime trade example is the **Trade Lens platform** developed by Maersk (in collaboration with IBM and built on Hyperledger Fabric), which is now used by its competitors. This platform enables the exchange of shipping and trade documentation and connects over **220 supply chain participants**, covering the entire trade process from origin to destination.

However, further reflection is needed to address legal and technological questions. In the near future, international regulations may emerge to ensure the secure and lawful operation of blockchain, ultimately facilitating **transparent, efficient, and reliable** international trade transactions.

The documents representing goods in an international trade operation are numerous. They include:

- **Financial documents**: linked to bank financing, such as letters of credit, bills of exchange, etc.

- **Commercial documents**: including the sales contract, pro forma invoice, and final invoice.

- **Transport documents**: such as the Bill of Lading (B/L), Air Waybill (AWB), Rail Consignment Note (CIM), and International Road Consignment Note (CMR).

- **Customs and regulatory documents**: including the certificate of origin, certificates of compliance with specific standards required by the importing country, import titles such as the import commitment, import license, prior import declaration, export license, sanitary and phytosanitary certificates, weight and packing notes, the EUR1 movement certificate, customs documents, quality certificates, insurance policies, and documents issued by port and airport authorities, including the single administrative document.

This multitude of documents generates significant administrative and coordination costs and exposes international trade transaction processes to fraud, errors, and losses.

The complexity of these procedures and the increasing costs have led importers, exporters, and government bodies to consider blockchain technology as a means to streamline export processes, bank financing, customs clearance, and international transport of goods. The ultimate goal: a **paperless global trade ecosystem**.

International trade finance remains crucial. The diversity of available financial instruments has energized global trade, including:

- Letters of credit

- International guarantees and sureties

- Pre-financing Facilities

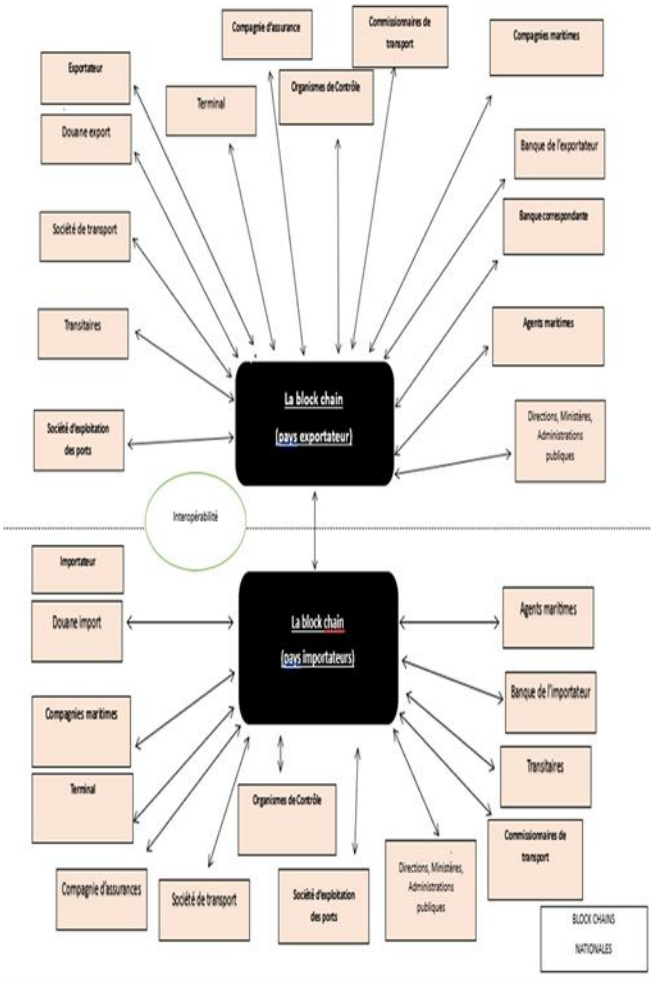
- Cash advances

- Open accounts based on exporters' order books.

A **national blockchain system** is envisioned in the future for both exporting and importing countries. These two platforms would exchange information, data, and messages via **interoperability frameworks** at minimal cost.

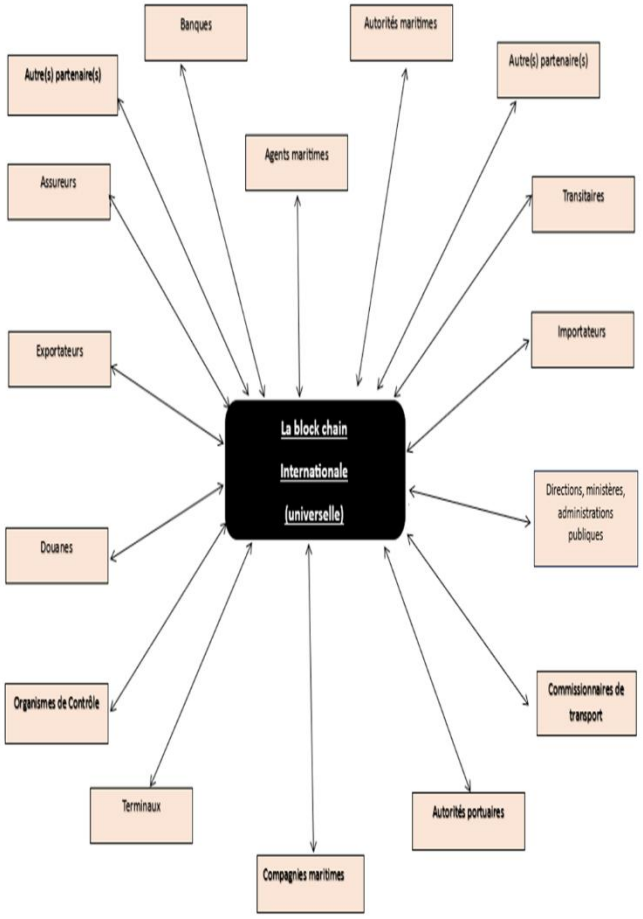
Moreover, a **global, universal blockchain platform** is projected to become operational in the coming decades, further transforming the landscape of international commerce.

National Blockchains



(a) Exporter **(b)** Export's customs **(c)** Freight company **(d)** Shipping agent **(e)** Port operating company **(f)** Terminals **(g)** Insurance company **(h)** Inspection agencies **(i)** Freight forwarders **(j)** Maritime companies **(k)** Exporter's bank **(l)** Correspondent bank **(m)** Maritime agent **(n)** Departments, ministries, public administrations **(o)** The blockchain (Exporting Country) **(p)** Interoperability **(q)** The blockchain (Importing country) **(r)** Importer **(s)** Importer's customs **(t)** Importer's Bank

The Universal International Blockchain



(a) Banks **(b)** Other partners **(c)** Insurance companies **(d)** Exporters **(e)** Customs **(f)** Inspection agencies **(g)** terminals **(h)** Maritime companies **(i)** Port authorities **(j)** Freight Forwarders **(k)** Departments, ministries, public administrations **(l)** Importers **(m)** Shipping agent **(n)** Maritime authorities **(o)** Maritime agents.

Conclusion

The National Single Window for Foreign Trade Procedures (PortNet), a hub of advanced technologies, is making significant strides in digitizing foreign trade. This includes improvements in customs processes and logistical streamlining aimed at facilitating international operations for accredited and classified economic operators, thereby fostering the development of their value chains.

The dematerialization of trade finance procedures is steadily advancing, driven by disruptive technologies adopted from abroad and embraced by both the financial and commercial communities. Numerous initiatives and pilot projects, both nationally and globally, are emerging within blockchain networks composed of diverse stakeholders working

collaboratively to enhance technical integration in international trade.

Blockchain technology, supported by artificial intelligence—including machine learning and deep learning—and powered by the invention of advanced algorithms and complementary technologies such as the Internet of Things (IoT), holds great promise for enhancing the financing of international trade, particularly documentary credit. This instrument remains a cornerstone of trade finance, widely used by importers and exporters, especially in strategic sectors and regions for high-value transactions.

The impact of these disruptive technologies on global trade is substantial—lowering transport costs, reducing information asymmetries, and streamlining transaction expenses. Physical flows must first be guaranteed by shipping companies. In parallel, product quality must be ensured by suppliers and inspection companies at both the loading and unloading ports. Documentation must then be meticulously reviewed by the exporter's bank, with the utmost diligence and precision.

The ultimate goal is to ensure efficient payment and financing solutions—ideally within a fully digitized international trade ecosystem. However, the use of electronic transferable records still requires an appropriate legal and regulatory framework under Moroccan law, along with international and multilateral coordination to fully digitize trade finance operations.

The UNCITRAL Model Law on Electronic Transferable Records (2017) provides a sound foundation for harmonizing digital trade practices. Once this model law is adopted and ratified by WTO member states, international commerce stands to benefit significantly from reduced costs and lead times through digitalization.

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