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STUDY GUIDE

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BOARD MEMBER

VEDAT YILDIZ
BOARD MEMBER

BAKR AMRO
ACADEMIC ASSISTANT

ITU MUN

Letter from the Secretariat

Dear Delegates,

It is with great honor and enthusiasm that I welcome you to ITUMUN 2025, where innovation, diplomacy, and collaboration come together to shape a brighter future. As Secretary-General, it is my privilege to witness the incredible passion and dedication each of you brings to this conference.

For this year's ITUMUN, we challenge you to think beyond borders and redefine the possibilities of multilateral cooperation. As a university rooted in engineering and technical excellence, we have embraced our unique identity by curating committees and agendas that emphasize industrial development, technological advancement, and critical technical issues. Whether debating economic policies, grappling with emerging technologies, or navigating historical turning points, you will be tasked with crafting solutions that not only address the challenges at hand but also inspire progress.

Model United Nations is more than just an academic exercise—it is a platform for you to develop critical thinking, refine your communication skills, and foster a spirit of teamwork. This conference is your opportunity to step into the shoes of world leaders, embracing the responsibility and influence that comes with these roles.

On behalf of the entire ITUMUN team, I wish you the best of luck in your preparations and during the conference itself. We are here to support you every step of the way, ensuring that your ITUMUN experience is both impactful and unforgettable. I look forward to seeing the energy and ideas you bring, and the lasting connections you will forge throughout this journey.

Warm regards,

Roya Alhariri
Secretary-General
ITUMUN 2025

1. Letter From the Board Member

Dear esteemed delegates of ITUMUN'25,

I am Vedat Yıldız, a management engineering student in İstanbul Technical University. It is a great honor for me to have acquired this chance to chair this committee, and I am very grateful to İstanbul Technical University Model United Nations Club for providing me this opportunity and organizing ITUMUN'25.

I welcome you all dearly to our committee, the World Trade Organization. This study guide takes on the agenda "Managing the Effects of the Russo-Ukrainian Conflict on Global Trade and Supply Chains". The conflict itself stands as one of the, if not the, most significant events in our day, influencing not only how we perceive international relations but also how the world economy functions. It excites me greatly to have this platform on which you, the delegates, will have the chance to converge discussions and solutions most brilliant.

While this study guide carries all the necessary information you will need in this committee as of the date I write these words, be aware that the agenda itself is an extremely hot topic and new decisions are taken from relevant parties on a daily basis. No matter how encompassing this guide is written, the nature of this agenda requires you to do your own research on related matters, especially on recent material and news.

If you have any questions regarding the committee or the agenda, I highly encourage you to contact me using my mail address vdtyld05@gmail.com and relieve yourself of any curiosities and doubts. I wish you have a great time reading this study guide and I can't wait to meet with you.

Sincerely,

Board Member of World Trade Organization

Vedat Yıldız

2. Introduction

The current disputes between Russia and Ukraine can be traced back to the dissolution of the USSR in 1991. Even after the Partition Treaty signed in 1997 –which states Russia would respect Ukraine's territorial sovereignty- Russia has considered Ukraine to be under its "sphere of influence" and multiple Russian leaders have stated that for Ukraine to be integrated into NATO would jeopardize Russian security, Russia would continue to pressure Ukraine on a multitude of other topics related to national sovereignty such as naval rights in Black Sea and Sevastopol, EU-Ukraine Association Agreement and even state politics. In 2008, Ukraine and Georgia sought to join NATO, which had mixed reception in the organization with Western European countries worrying their integration would antagonize Russia whereas US pushed for their admission; ultimately the two nations were rejected but NATO members stated that they would eventually be integrated into NATO.

In November 2013, a wave of large pro-EU protests with deadly clashes referred to as Euromaidan erupted in Ukraine as a response to then President Viktor Yanukovych –who was heavily pro-Russian- deciding to not sign the EU-Ukraine Association Agreement but instead choosing closer ties to Russia. The protests resulted in early elections and a new bill was proposed to repeal a law enacted in 2012 which declared Russian as a state-language.

This resulted in massive pro-Russian protests in Ukraine's regions with high ethnic Russian population. The protests were exacerbated by Russian state media claiming Ukraine sought to get rid of ethnic Russians along with their culture, Russia continues to accuse Ukraine of Nazism and uses this claim to justify their actions to this day. This region included the Crimean Peninsula which had both ethnic Russian and Ukrainian inhabitants and whose possession was contested and previously threatened by Russia. Republic of Crimea was an autonomous state under Ukraine with pro-Russian separatist movements at the time fueled by Russia itself.

On 27 February 2014, Yanukovych declared he still remained the true president of Ukraine and at the same time Russia commenced a military campaign in Crimea. Russia took control of government buildings in Crimea and held a referendum on Crimea's status under occupation, according to the authorities installed by Russia the result was in favor of joining Russia. The referendum is considered by many states and organizations such as the UN is considered to be held under undemocratic conditions and therefore invalid. The invasion of Crimea marks the start of the Russo-Ukrainian war and continues to this day.

Throughout 2014, the conflict would escalate in Eastern Ukraine with Russia and regional insurgents utilizing the ongoing protests and military force against Ukraine named the Donbas War named after the region. At the start of 2015, the Minsk II agreement which aimed to stop the war was signed, the agreement managed to stabilize the conflict but costed

Ukraine to cede control to the breakaway state Donetsk People's Republic –a state with little to no recognition other than Russia. Until 2022, the conflict still continued along the agreed line of contact. During this period a total of 29 ceasefire agreements were made, all of them agreed to remain in force indefinitely, but none of them lasted more than two weeks. Aside from military conflict, there were also a multitude of naval incidents and cyberattacks.

From 2021 to 2022, Russia built-up a major military force in its and Belarus's border with Ukraine. When Russia denied the build-up, US released intelligence reports on Russian plans to invade Ukraine which accurately predicted the Russian invasion. Prior to the invasion Russian officials including Vladimir Putin accused Ukraine of inciting tensions, Russophobia and even genocide. Putin questioned Ukraine's sovereignty with fabricated arguments aimed at dismissing Ukraine's right to self-determination. The Russian government demanded NATO to cease all operations in Eastern Europe and ban all former Soviet states including Ukraine from ever joining the organization. NATO member states rejected these demands as it would violate their "open-door" policy.

On 21 February 2022, Russia diplomatically recognized the Donetsk and Luhansk people's republics and deployed Russian troops in the region in what they referred to as a "peacekeeping operation", in response Volodomir Zelenskyy ordered the conscription and mobilization of army reservists. On 24 February 2022, Russia started its full-scale invasion of Ukraine. There was no formal declaration of war, and the military involvement was called a "special military operation" with the purposes of "denazifying" and demilitarizing Ukraine by the Russian government. Up to 1.000.000 lives have been lost from both sides of the conflict, many atrocities and human rights abuses were committed by Russia, millions have been displaced, once populous cities have been turned into battlegrounds...

Russo-Ukrainian War has had and continues to have immense implications on global politics and economy. The war itself has severely decreased agricultural production in Ukraine –often nicknamed the "breadbasket of Europe"- and raised logistical difficulties in transport as Ukraine lost access to all their ports to Russian control, and most importantly the war has costed Ukraine with human capital with thousand dead and a significant working-age population under conscription.

The conflict has affected Russia just as much; with the international majority condemning Russian military action many nations such as US, UK, EU member states and others have imposed sanctions, this has caused Russia to divert their exports –most notably oil and natural gas- from Europe which was their biggest consumer to other regions. In addition to these sanctions many western companies pulled from the Russian market. These factors have significantly damaged the Russian economy and their place in global economics.

Obviously, Russia and Ukraine are not the only countries to be affected by the conflict. The sanctions against Russia have forced Europe to adapt to alternate supply lines most significantly in the energy sector. Russia has had to find new consumers as well and started to

sell their oil and natural gas to states such as China and India at discounts, which has affected global energy prices. The decrease of Ukrainian agricultural produce has had not only an impact on Europe, but also emerging markets and LEDCs that rely on imports of energy and food. Millions of Ukrainian refugees have escaped to Europe and cause a refugee crisis in bordering countries such as Poland, Romania and Hungary. All these aforementioned factors have caused supply lines to be challenged and global economic alliances to be reshaped.

The Russo-Ukrainian War remains one of the most critical events of our day, it has slowed down global growth and pose a risk of recession. It is unclear how the war will continue, how long the war will continue and how the war will be resolved. It is highly crucial that however the war may continue necessary economic responses and precautions are taken in order to not only protect the self-interests of the world's nations and the global economy, but also to support Ukraine against its unjustified invasion by Russia.

3. Sanctions, Logistics and Supply Line Challenges

Due to the conflict, Ukraine has suffered logistical challenges in transporting their goods to their trade partners. With the loss of Crimea in the initial invasion in 2014 and the complete loss of their Eastern shores after 2022, Ukraine has lost the majority of their ports. While they still remain in control over their southern ports, with Russian blockades and their use of naval mines the Black Sea has become completely unavailable for Ukrainian trade. This meant that it became either much more difficult or outright impossible for Ukraine to reach their products to some of its trade partners such as those in the Caucasus region (Armenia, Georgia, Azerbaijan), Central Asia, East and Southeast Asia who all relied on the goods to be transported from the Black Sea. These economies had to either come up with new supply lines from Ukraine or find new trade partners.

Moreover, European Union, UK, US and other states have imposed various sanctions on Russia. The goal of these sanctions is to pressure Russia to stop its aggression into Ukraine and weaken its economy. These sanctions include financial and banking related bans, bans on export of technological goods to Russia, bans on import of energy and oil from Russia, bans on shipping and aviation, and other bans. Even individual sanctions have been issued against Putin, his partners and the Russian oligarchy. Russia has been greatly affected by these sanctions and has been forced to not only find new markets for its exports but also find new trade partners to get necessary imports; however, the sanctions have had several effects on the countries who imposed them too. For instance, European nations such as Germany who used to export energy and raw materials such as metals and minerals in order to fuel their industrialized economies have had to satisfy their supply chains from alternative sources. Overall, the disruption of supply chains caused both by Russia's aggression and the sanctions imposed on them have affected the industries of many nations around the world negatively. The conflict has caused inflation in Europe to reach record heights and brought risk of recession for some parts of Europe.

3.1. Sanctions

After the start of the Russo-Ukrainian conflict in 2014, European countries with the lead of United States imposed several sanctions on Russia and even specific ones for Russian occupied Crimea. The purpose of these sanctions –or any other sanction in principle- is to pressure Russia into stopping its invasion without escalating the military conflict. These sanctions –and those imposed before 2022- have damaged Russian economy and caused Rouble to lose value. Nevertheless, the impacts of pre-2022 sanctions are nothing compared to the sanctions imposed after 2022. Most political scientists and researchers don't think that Russia is capable of keeping up with the sanctions, some researchers have even compared the Russian economy of today to be not so dissimilar from that of the USSR before its collapse. The current sanctions on Russia are remarked to be much more aggressive and extensive when compared to other sanctions, a former Russian minister has described the sanctions as a "financial nuclear bomb falling on Russia". In addition to the sanctions, Russia has also been banned from various events such as the Eurovision Contest and Olympic Games 2024. Belarus has also been dealt with similar sanctions and bans as a consequence of their support to Russia in invading Ukraine.

The sanctions on Russia were not imposed all at once as both European and US industries relied on Russian exports of raw materials and energy. The sanctions were expanded upon more and more as they managed become less dependent on Russia, thereby having more freedom over their trade with Russia. This allowed Russia to partially negate the consequences of these sanctions by focusing on different markets. Namely, in the energy market Russia has diverted their exports into countries such as China, India, Turkey and have increased trade with Middle Eastern, Asian and South American countries. Still, this comes at a cost to Russia as they are unable to reach their previous export rates and have had to offer sales to these markets to sell their fossil fuels.

It is not very clear how the West will proceed with the sanctions. Further sanctions depend on the EU being able to attain necessary imports from elsewhere and more importantly willingness to continue the sanctions. With the industries of likes of Germany, France and Spain –although significantly decreased- continue to import energy from Russia it is not viable for EU to expand on its sanctions until they grow even less dependent on Russian trade. In parallel, certain EU countries such as Slovakia and Hungary are known to generally hold more pro-Russian attitudes compared to other member states. Hungary in particular, continues to buy LNG from Russia and even makes profit by selling Russian LNG to other states as a third-party seller therefore avoiding the restrictions. Hungary has also generally been against Russian sanctions to be expanded and have even declared that it would put the brakes on any change to the sanctions' regime until after the US presidential election in 2024. The European Union votes on the sanctions every 6-months unanimously, meaning that any objections at all from member states is enough to fail proposals. Hungary could use this power as a means of negotiation with other EU members and potentially even the US.

Furthermore, we also don't exactly know what the new President of US Donald Trump Jr. has in mind on foreign policy regarding Russia.

3.1.1. Financial and Banking Sanctions

Following the 2022 invasion, many states including US, UK, EU and other states have completely frozen Russian assets in their countries and have excluded Russian banks from their financial systems. According to the French Finance Minister Bruno Le Maire, roughly $1 trillion worth of Russian assets were frozen. Even some Chinese banks such as the Industrial and Commercial Bank of China, which is the largest bank in the world, limited transaction with Russian banks at one point. Several states including not only the West –even Switzerland and Monaco- but also states like Japan, South Korea and Singapore put various sanctions and restrictions on trade with the Russian central bank in order to prevent Russia from liquidating their foreign reserves, as a result analysts say that roughly 50% of Russian foreign reserves which amount to $630 billion USD have been rendered useless. These sanctions related to finance and banking also extend over Belarus as well.

Frozen Russian assets have caused many discussions and debates on what should be done with it. While some parties argue that whatever asset that is frozen should be eventually returned to its owners after the conflict ends, others argue that these should not be returned to the culprits of this war at all. In 2023, the G7 countries agreed to raise a loan for Ukraine of up to €35 billion, what is interesting however is that this loan will be repaid from the interest on frozen Russian assets. On 24 December 2024, Ukraine received the first tranche of loans from the frozen Russian assets from US, and on 10 January 2025, EU provided Ukraine $3 billion of the loan. Russia has stated that this loan is robbery, being repaid with money that is not theirs to give.

Russia has also been banned from SWIFT -the main messaging network through which international payments are initiated. Initially proposed in 2014 by UK to the EU as a sanction against Russia, but SWIFT rejected. As a cautionary measure against such threats Russia then developed SPFS, an alternative to SWIFT. Following the 2022 invasion, the Baltic States (Estonia, Lithuania, Latvia) and UK pushed for Russian banks to be banned from SWIFT. While other states had been banned from SWIFT previously (Iran, Sudan, North Korea, partially Venezuela), other European countries were hesitant to weaponize SWIFT. There were also concerns that banning Russian banks from SWIFT would bolster the development of CIPS –an alternative to SWIFT developed by China-, which could potentially weaken SWIFT. Ultimately, EU, US, UK and other states such as Canada, Japan agreed to cut off certain Russian banks and from then on, the bans were expanded upon. Currently, only a few Russian banks are exempt from these bans such as those involved in critical sectors such as energy and some smaller banks.

European states mostly refuse to use Russian Rouble when facilitating any trade with Russia. Overall, the European nations' refusal to use Rouble and the isolation of Russia from international trade has caused the Russian Rouble to lose value. In 2013 there were around 35 Rouble's to the USD, in 2015-19 it traded in 60-70 range, as of January 2025 the 1 USD is roughly worth 100 Rouble.

3.1.2. Sanctions on Import/Export of Goods

Following the 2014 invasion of Ukraine and the Donbas War, US and EU states have imposed various sanctions on the export of a multitude of products to Russia. Specifically, these states enforced sanctions on dual-use items (the term refers to items that can both be utilized for commercial and military use, i.e. trucks), electronics and technologic devices such as semi-conductors and chips. Sanctioning these products were aimed at keeping away Russia from Western technology and preventing Russia from utilizing technologies to develop their military and economy, targeting aerospace, shipbuilding and defense industries in particular.

With the escalation of the conflict in 2022, Western states have expanded upon these sanctions further and continue to do so. Sanctions imposed on Russian banks and government have decreased trade with US and EU to a minimum. As a result, Russia has increased cooperation with states such as China and Iran in order to not fall behind the West in tech industries. There have been instances of Russians and foreign companies engage in trade illegally through various methods, such as through unofficial ways or through third parties who act as a buffer between a company and Russia to sell the products from one another. The states who have imposed sanctions work in tandem to combat illegal trade and enforce their laws. Companies have been provided information on how to counter Russian sanctions and they are held accountable when they are found to have circumvented the sanctions. Other policies include limitations on ship-to-ship transfers taking place on the EEZ of a member state and a total ban on the use of Russian trucks and trailers in transportation. EU has also issued several bans on new investments on Russia in fields such as the mining sector and the energy sector.

3.1.3. Sanctions on Fossil Fuels and Europe-Russia Pipelines

In 2021, Europe accounted for roughly 56% of Russia's fuel exports. Both Europe and Russia were very dependent on each other when it came to fossil fuels, Europe received more than half its fossil fuel from Russia and both European industries and the public depended on cheap Russian gas and oil. This means that EU have not been at complete liberty when imposing sanctions on the Russian energy industry compared to other sectors. Nonetheless, EU and G7 members have put in force strong sanctions against Russian fossil fuels. Below is a list of some of the measures taken by EU:

- has completely prohibited the import of Russian seaborne oil and refined petroleum products,
- has an import ban on all forms of Russian coal

- an import ban on liquified petroleum gas (LPG), impacting annual imports worth over €1 billion, with an exemption for existing contracts for a maximum period of 12 months
- a ban on future investments in, and exports to, liquified natural gas (LNG) projects under construction in Russia
- a ban on the use of EU ports for the transshipment of Russian LNG
- a ban on the import of Russian LNG into specific terminals which are not connected to the EU gas pipeline network
- a ban on exports of specific refining technologies, making it harder and more costly for Russia to upgrade its oil refineries
- a far-reaching ban on new investment across the Russian energy sector, with limited exceptions for civil nuclear energy and the transport of certain energy products back to the EU

EU has also taken decision to ban the re-exporting of Russian LNG which comes into Europe to third countries by March 2025, roughly 20% of imported LNG from Russia in Europe gets re-exported.

Additionally, EU and G7 countries have entered a price-cap coalition against Russia. The price caps prevent EU operators, for example, from providing transport or insurance services for the transport of Russian oil above the cap. Three price caps are currently in place, on the export of:

- Russian seaborne crude oil, fixed at a maximum price of US$60 per barrel
- “premium-to-crude” petroleum products, such as diesel, kerosene and gasoline, fixed at US$100 per barrel
- “discount-to-crude” petroleum products, such as fuel oil and naphtha, US$45 per barrel
- in addition, to help tackle the ‘shadow fleet’ used by Russia to circumvent the price caps, the G7+ Price Cap Coalition has recently introduced measures to closely monitor the sale of tankers to third countries

The initial sanctions against Russia were met with threats from Russia that they would cut Europe’s gas imports and have done so at certain points. Following the initial sanctions –which did not include major bans on LNG exports-, in April 2022 Russia followed with their threat and cut off gas transfer to Poland and Bulgaria, at the time two nations very reliant on Russian LNG. In May 2022, Russia doubled down and shut-down Yamal-Europe pipeline which transferred gas through Belarus, Poland and Germany and from those countries connected with European pipeline networks and distributed gas. And on 26 September 2022, Gasprom –Russian state-owned energy company- announced that Nord Stream 1 would be indefinitely shutdown following explosions on 3 of the 4 pipes. The cause of the explosions is unknown, it is not clear whether it was perpetrated or unintentional. The Nord Stream 1 transferred gas from Russia to Germany. Throughout the course of these events and following them, Europe was very alarmed in case of a potential energy crisis that could arise in the coming winter. European nations stockpiled their gas deposits, with Germany filling more than 80% of their full capacity, and hurriedly searched for alternatives to Russian LNG.

Europe took the decision to grow independent from Russian fossil fuel trade by increasing import of energy from states such as US, MENA states such as Qatar, Egypt, Israel, Algeria, and Norway have increased its LNG export to other EU states, with EU continuing to build new LNG terminals and related infrastructures. EU members have also recognized the importance of renewable energy as a means to combat foreign dependency on energy, with members planning to increase the share of renewable energy in their grids. However, not all the geographies of EU states are as suitable as others for increasing the share of renewable energy in their countries.

Despite the success of sanctions on crude oil, petrochemical products and coal, Europe still continues to import Russian LNG. In fact, in 2024 EU reached record heights of at least 16.65 million tons of LNG –19% of its LNG imports-, surpassing the 15.18 million tons in 2023. EU countries such as Slovakia, France, Hungary, Austria, Spain lead in Russian LNG consumption and other countries continue to import LNG from Russia. Interestingly enough, it was Russia

However, Ukraine declared at the end of 2024 that they would not renew their agreement with Russia which allowed for them to transit gas from pipelines located on Ukraine and with the start of 2025 Ukraine has done so. This was met by huge criticism by the likes of Hungary and Bulgaria who not only relied on Russian gas but also re-exported it to other states. With Ukraine, shutting off its pipelines the only way currently to import gas from Russia through pipelines is by either using the Blue Stream or the TurkStream both passing from Turkey.

3.1.4. Sanctions on Russian Maritime Activities

In accordance with SARPOL, MARPOL and UNCLOS conventions which regulate international maritime activities, EU, G7 and other countries have imposed sanctions on Russia limiting their maritime activities. These policies not only affect the Russian government, companies but also individuals. Europe has flagged Russian ships and have put certain restrictions on them. Once these ships are flagged, they remain so even if they change flags and ownership. EU, UK, US and Canada have also banned Russian aircraft from entering their airspace.

Flagged ships are not allowed to dock on European ports, or have to board their ships, and the ships that were on European ports before these sanctions are not allowed to return once they leave. This also includes anchoring ships. The provision of certain services such as insurance and financing of these flagged ships is banned. Russian ships also face restrictions when crossing the EEZs of sanction-imposing countries, but international law does not allow for these regions to be completely closed off to Russian ships.

Sanctions on Russian maritime activities have had significant consequences not only for Russia but also for global shipping, trade, and the international maritime community. To further elaborate, the situation has also given rise to countermeasures, secondary sanctions, and the emergence of a "shadow fleet" as Russia seeks to adapt to these challenges.

Counter Sanctions and Evasive Measures

In response to Western sanctions, Russia has enacted counter-sanctions targeting certain sectors or countries that have imposed restrictions. For example, Russia has introduced measures such as restricting the entry of vessels from countries that have imposed maritime sanctions on its flagged ships. Additionally, Russia has sought alternative routes and ports outside the EU and G7 countries, turning to ports in countries with less stringent sanctions enforcement.

One of the key countermeasures has been the establishment of partnerships with non-Western nations (such as those in Asia and the Middle East) that are willing to bypass certain restrictions. Russia has also increased its reliance on local maritime industries and has attempted to mitigate the damage to its shipping by leveraging countries like China, India, and Turkey—countries that are not part of the sanctions regime. China and India have increased their exports of Russian gas at significant discounts and continue their trade as usual. Turkey also increased its Russian gas imports with discounts and have stated that they would not be able to join sanctions due to high amount of trade between them.

Moreover, Russia has sought to exploit loopholes in maritime law, taking advantage of weaker enforcement in certain regions and under the auspices of flags of convenience (where a ship is registered under a country different from the owner's country to avoid regulatory or taxation restrictions). This brings us to the issue of secondary sanctions.

Secondary Sanctions

Secondary sanctions refer to the imposition of sanctions not directly on the sanctioned party (in this case, Russia), but on third-party companies or entities that conduct business with them. Western powers, including the US and EU, have used secondary sanctions to deter non-Western countries, businesses, and shipping companies from engaging with Russia. These sanctions are intended to dissuade entities in countries that are not directly involved in the conflict from supporting or facilitating Russian maritime activity.

For example, businesses that provide services such as fuel, insurance, or financing for Russian vessels or those that engage in trade with Russia might face secondary sanctions, such as being cut off from the US or EU markets or being subjected to freezing of assets. These secondary sanctions make it more challenging for Russia to find companies that are willing to work with its ships, especially in key sectors like ship insurance, which is often underwritten by Western companies.

The use of secondary sanctions has caused ripple effects globally. Countries or companies that do not comply risk significant economic losses and damage to their international reputation. This pressure encourages adherence to the sanctions, further isolating Russia from the global financial and maritime networks.

Russia's Shadow Fleet

As sanctions continue to pressure Russia's ability to operate legally in international waters, a "shadow fleet" has emerged as one of the most prominent methods of evading these restrictions. The shadow fleet refers to a network of vessels, often owned by Russian entities or individuals, that operate covertly to avoid sanctions enforcement. This fleet may include older ships that are re-flagged under different jurisdictions, often in nations that are more lenient or less transparent about compliance with international regulations.

The shadow fleet is designed to obscure the true ownership of vessels, often by transferring ships to countries with weaker maritime regulatory standards. These flags of convenience countries are typically less inclined to enforce Western sanctions, allowing ships to continue operations in areas such as energy exports (especially oil and gas), commodity shipping, and other commercial trades that would otherwise be restricted under sanctions.

In the wake of Russia's invasion of Ukraine and the global sanctions regime that followed, it is estimated that hundreds of ships are now operating in this grey area. These ships may disguise their movements through the use of complex shell companies or false documentation, and by removing or altering tracking devices (such as Automatic Identification System or AIS). Such practices allow them to bypass tracking and inspection regimes while continuing to transport goods, particularly energy resources like oil, to buyers in non-Western countries.

While this "shadow fleet" is difficult to track comprehensively due to the use of deceptive practices, shipping industry analysts have increasingly reported on its expansion, with some estimates indicating that Russian-owned or controlled vessels have become a substantial part of global shipping traffic, despite Western sanctions efforts.

Impact on Global Shipping and Future Outlook

The broader effects of sanctions and the rise of the shadow fleet have been felt globally, especially in shipping markets. The re-flagging of vessels and the use of shadow fleets create complexities for maritime safety and environmental monitoring, as ships operating under suspicious flags may not comply with international regulations, such as those concerning pollution control, crew welfare, and safety standards.

This shadow fleet poses a serious challenge for international law enforcement, as it further complicates the already difficult task of ensuring compliance with maritime regulations. Moreover, the increased reliance on non-Western ports and trade routes could shift the balance of power in global trade, as countries that have not adhered to sanctions emerge as key transit points for sanctioned Russian goods.

Furthermore, the legal gray areas created by these practices are raising questions about the future of international maritime law. Increased efforts to track and crack down on the shadow fleet through intelligence sharing and coordinated actions by maritime authorities could intensify. However, as Russia and its allies increasingly turn to alternative methods of maritime trade, the landscape of global shipping could undergo significant changes, potentially leading to a more fragmented system of international commerce where major geopolitical powers have competing influences.

In conclusion, while sanctions on Russia's maritime activities have created serious challenges for the Russian economy, they have also spurred adaptations in the form of counter-sanctions, secondary sanctions, and the development of a shadow fleet. The evolution of these strategies reflects the resilience of Russian maritime operations, but also highlights the limitations and unintended consequences of sanctions in an increasingly complex global trade environment.

3.2. Logistics and Supply Chain Issues of the Ukraine War

The war in Ukraine has caused significant disruptions to logistics and supply chains, impacting trade and transportation across Europe and beyond. These disruptions have affected the movement of raw materials, fuel distribution, and regional trade, with ripple effects across global markets.

Ukraine's critical infrastructure has been severely damaged due to the ongoing conflict. Key ports like Odesa, which were vital for grain and other exports, have been closed or rendered unsafe because of military activity. The damage to railways and road networks has further compounded the issue, leaving vital transport links disrupted and some areas unsafe for freight transport. This has led to major delays in the movement of goods within Ukraine and across neighboring borders, forcing shifts to less efficient transport routes. In the absence of smooth trade routes, the Ukrainian government and international partners have increasingly relied on road, rail, and river systems, all of which are slower and more costly than previous infrastructure.

Furthermore, the conflict has inflicted damage on vital pipelines and ports that were essential for energy and commodity trade. With these routes disrupted or closed, logistical bottlenecks have occurred, significantly affecting the flow of goods such as oil, natural gas, and other vital materials.

The war has placed enormous pressure on neighboring countries, such as Poland, Slovakia, Romania, and Hungary, which have had to accommodate an influx of goods rerouted from Ukraine and Russia. As Ukraine's transport system collapses, these countries' logistical networks have become overburdened, resulting in congestion at border crossings and delays, particularly for industries reliant on just-in-time delivery systems, such as agriculture, manufacturing, and electronics.

The rapid shift in supply routes has led to inefficiencies, increasing transport costs, and exacerbating supply chain bottlenecks. Many of these countries have had to scale up their logistical capacities quickly to manage the increased flow of goods, but their infrastructure is often insufficient to handle the surge. This situation has created significant delays and further strained the region's supply chain networks.

Ukraine and Russia are key suppliers of raw materials, such as grain, metals, and energy resources. The war has severely disrupted the production and export of these vital commodities, leading to shortages and increased prices on the global market. For example, Ukraine, one of the world's largest wheat exporters, has seen its ability to export grain crippled, driving up food prices worldwide. Similarly, the disruption in Russia's metal and

energy exports has led industries across Europe and beyond to seek alternative suppliers, often at higher prices.

Fuel distribution has been especially impacted by both the conflict and sanctions. Russian energy exports have been hindered by damaged pipelines and logistical hurdles, while the EU has imposed restrictions on Russian oil and gas. These disruptions have led to rising fuel prices, further increasing transport costs and contributing to inflation. Shipping companies, truckers, and freight operators are passing these added costs onto consumers, putting further pressure on industries already struggling with supply shortages.

Rebuilding and modernizing Ukraine's infrastructure, once the conflict subsides, will be a long-term challenge requiring significant investment. As the war continues, European countries are exploring ways to diversify supply routes, expand their logistical networks, and bolster supply chain resilience. However, these efforts will take considerable time, resources, and effort, and the ongoing instability in the region adds complexity to recovery.

The war in Ukraine has underscored the vulnerabilities in global supply chains, prompting industries and governments worldwide to rethink their reliance on single trade routes. The need for more diversified, resilient systems has become evident. Expanding supply sources, investing in alternative infrastructure, and improving logistical capabilities will be essential for mitigating future risks and minimizing the impact of similar disruptions on global trade.

4. Impacts on Global Sectors

4.1. Agricultural Produce and Fertilizers

Prior to the Russian invasion in 2022, Ukraine was a critical player in global agricultural trade. In 2021, the country was:

- The 5th largest wheat exporter globally, accounting for 12% of global exports,
- The 4th largest corn exporter globally, with 9% of global exports,
- The 3rd largest barley exporter globally, contributing 17% of global exports,
- The largest sunflower oil exporter, making up 46% of global exports...

Ukraine’s food exports were pivotal to many regions around the world. In 2021, Europe accounted for 61% of Ukraine's food exports, while East Asia and the Pacific received 20%, and the MENA region received 5%. Key countries that heavily relied on Ukrainian agricultural exports included:

- China (7.9% of food exports from Ukraine)
- Japan (25% of food exports from Ukraine)
- Belarus (20% of food exports from Ukraine)
- Georgia (40% of food exports from Ukraine)
- Azerbaijan (25% of food exports from Ukraine)
- Kazakhstan (23% of food exports from Ukraine)
- France (11% of food exports from Ukraine)

The war drastically affected Ukraine’s agricultural production and its ability to deliver these vital goods to its global partners. The conflict, which began with Russia's annexation of Crimea in 2014 and escalated in 2022, led to a complete loss of control over Ukraine’s Eastern shores and crucial port infrastructure. Before the war, Ukraine's strategic location along the Black Sea allowed it to easily export vast quantities of grain, oilseeds, and other agricultural products to the Middle East, Africa, Asia, and Europe. However, with Russia’s blockades, the use of naval mines, and the destruction of vital port infrastructure, Ukraine’s access to the Black Sea was severely restricted.

The loss of port access has had devastating consequences for Ukraine’s ability to fulfill its agricultural exports, particularly to trade partners in the Caucasus region (Armenia, Georgia, Azerbaijan), Central Asia, and East and Southeast Asia. These regions were highly dependent on goods transported through Ukrainian ports on the Black Sea. With Russia’s naval blockade effectively shutting down these key routes, countries in these regions have been forced to either find alternative supply lines or source food from new trade partners.

For example, countries in Central Asia (such as Kazakhstan and Uzbekistan), which traditionally relied on Ukraine’s wheat and barley, have had to reorient their trade routes and find new sources of supply, often at higher costs and with longer delivery times. Similarly, Georgia and Azerbaijan, both of which received a substantial portion of their food imports from Ukraine, have struggled to find reliable replacements. The disruption has led to supply shortages and price inflation, making essential foodstuffs more expensive and harder to acquire.

The war in Ukraine has also severely impacted the global fertilizer market, as both Ukraine and Russia are major exporters of key fertilizers like potash, ammonia, and urea. With significant portions of fertilizer production in both countries disrupted by the conflict, global supplies have been strained, leading to a sharp increase in prices. Countries that rely heavily on affordable fertilizers, particularly in Europe, Africa, and Asia, have seen their agricultural costs soar. These price hikes have placed a heavy burden on farmers, especially in developing regions where fertilizer access is already limited. The resulting fertilizer shortages are expected to affect crop yields globally, further compounding the food security crisis and making it even harder for nations to meet growing food demand. As farmers face higher production costs, food prices are likely to rise, deepening the economic strain on vulnerable populations worldwide.

The global effects of Ukraine's diminished exports and price increase of fertilizers have been felt most acutely in East Asia, Africa, and the Middle East, where food security is heavily tied to Ukrainian agricultural products.

East Asia, especially Japan, has faced significant shortages of key grains and oils, as the country traditionally sourced a large portion of its corn, wheat, and sunflower oil from

Ukraine. The country has turned to alternative suppliers, but this has often meant higher costs and a longer waiting period for goods.

Africa has been hit hard by the disruption of Ukrainian grain exports. Countries like Egypt, which is the world's largest importer of wheat, heavily depended on Ukrainian wheat. The war has driven up global wheat prices, and many African nations are grappling with a severe food insecurity crisis as they struggle to replace Ukrainian grain with more expensive alternatives from other parts of the world. The sharp increase in food prices has made basic foodstuffs like bread unaffordable for millions of people, contributing to heightened social unrest and political instability in some regions.

The Middle East, particularly countries like Lebanon, Syria, and Turkey, also faced disruptions in their wheat and sunflower oil imports. Lebanon, which relied on Ukrainian grain for much of its food supply, has been forced to look elsewhere, leading to both higher costs and shortages. For Turkey, the situation has been complex, as it had close trade ties with Ukraine before the war, but has had to adjust to new sourcing strategies, especially in light of rising prices.

In response to the shortages caused by the war, countries dependent on Ukrainian food exports have been searching for new trade partners. The United States, Canada, and Brazil have increased their agricultural exports to help fill the gap left by Ukraine. However, the challenge of replacing Ukraine's agricultural output is not straightforward. These countries cannot easily ramp up production to meet the surging global demand, and their own supply chains have been stretched thin.

Russia, in turn, has attempted to capitalize on the situation by expanding its own agricultural exports, though it faces challenges due to sanctions and logistical difficulties. Russian wheat exports have surged to countries that previously depended on Ukrainian supplies, but the global market for wheat remains tight, with many regions experiencing increased prices.

At the same time, other regions, such as Latin America and Eastern Europe, have been looking to expand their agricultural sectors to meet demand. However, the overall capacity to replace Ukrainian exports is limited, and many countries have found themselves in competition for the same global supply.

The long-term effects of the Ukraine conflict on global food security remain uncertain. As the war drags on, the global food supply is likely to face continued volatility, with heightened risks of shortages, inflation, and geopolitical instability. The disruptions to Ukrainian agricultural production and export infrastructure are not only a regional problem but a global

one, as millions of people across the world rely on Ukrainian food exports to meet their daily nutritional needs.

The international community will likely need to find more sustainable solutions to ensure global food security. This could involve investing in alternative food supply routes, diversifying agricultural sources, and addressing the long-term impacts of climate change and geopolitical conflict on food systems. However, the immediate future points to a more fragmented global food market, with some regions benefiting from new suppliers and others facing an increasingly precarious food security situation.

In conclusion, the disruption of Ukrainian food exports has created a ripple effect that has reverberated across the globe, particularly in regions heavily reliant on Ukrainian agricultural products. While alternative supply chains are being sought, the ongoing challenges in transportation, pricing, and sourcing will continue to impact global food markets for the foreseeable future.

4.2. Energy Markets

The Russian invasion of Ukraine has significantly reshaped the global energy sector, with far-reaching consequences for energy trade, geopolitical relations, and the transition to renewable energy. Europe, once heavily reliant on Russian fossil fuels, has accelerated efforts to diversify its energy sources, turning to the U.S., Qatar, and Algeria for LNG, while also ramping up investments in renewable energy infrastructure. Despite these efforts, challenges remain, particularly for countries like Poland and Hungary, which continue to face difficulties in transitioning to cleaner energy due to geographical and infrastructure limitations.

For North America, the war has presented an opportunity to become a key LNG exporter to Europe. However, this surge in demand has raised concerns about domestic energy prices and the balance between meeting internal needs and fulfilling export commitments. This shift has also pushed North America to invest further in renewable energy technologies to meet long-term climate goals.

In the MENA region, countries like Qatar and Algeria have increased their LNG exports, stepping in to replace Russian supplies in Europe. Meanwhile, Gulf states like Saudi Arabia and the UAE are diversifying their energy portfolios with an increased focus on renewable energy projects such as solar and green hydrogen, aiming to position themselves as leaders in the emerging global green energy market.

China and India have benefited from discounted Russian energy, but both countries are also focused on long-term energy security. China has accelerated investments in solar energy and electric vehicles, while India is turning to solar power to meet growing energy demands.

Though both nations are still reliant on fossil fuels, they are making strides toward cleaner energy alternatives.

In Africa, rising energy prices have exacerbated economic instability, especially for countries dependent on Russian energy. Some African nations, such as South Africa and Kenya, are increasing their investments in renewable energy, particularly solar and wind power, to address both rising costs and energy access challenges. However, many countries still struggle with energy poverty, and the economic barriers to adopting renewables remain significant.

Looking ahead, the global energy landscape will continue to evolve. The war in Ukraine has accelerated the diversification of energy supply chains and highlighted the need for greater energy security. Technological advancements in energy storage, grid management, and green hydrogen will be crucial for the transition to renewable energy. Energy prices are likely to remain volatile, especially in developing countries, where energy affordability is a growing concern.

Geopolitically, the war has shifted energy alliances, with countries like the U.S., Qatar, and Saudi Arabia gaining more influence. As the world transitions to renewable energy, new power dynamics will emerge, with those leading in green energy technology gaining geopolitical leverage. Ultimately, the global energy future will depend on how nations adapt to these changes and collaborate to create a more sustainable and secure energy system.

4.3. Metal and Mineral Industry

The war in Ukraine has significantly disrupted the global metals and minerals market, especially with the EU's decision to cut off Russian products in response to the conflict. Russia, a major global supplier of critical metals and minerals like nickel, palladium, and aluminum, has faced sanctions and trade restrictions that have altered supply chains and caused price volatility. The EU, which previously relied on Russia for a substantial portion of its metal imports, has been forced to find alternative sources, resulting in shifts in global trade dynamics and an increased focus on supply diversification.

Russia’s role as a major supplier of key metals, including nickel (vital for battery production), palladium (used in automotive catalytic converters), and aluminum, has been significantly impacted by the EU’s sanctions. The EU imposed restrictions on Russian metals and minerals, which have been critical in industries like automotive manufacturing, aerospace, and electronics. The ban on Russian aluminum, in particular, sent ripples through the global market, as Russia is one of the largest producers of this metal. With Russian supplies no longer easily accessible, the EU and other regions have scrambled to secure alternative sources, with many turning to other major producers like China, Canada, and Brazil.

However, the move to cut off Russian exports has led to supply shortages and higher prices for key materials. The disruption in the flow of Russian nickel, which is crucial for electric vehicle (EV) batteries, has also contributed to the increased cost of EVs, as well as a general tightening of the market for critical minerals. These price hikes are particularly noticeable in sectors pushing for green technologies, such as renewable energy infrastructure, electric vehicles, and electronics, all of which depend heavily on these metals.

In response to the loss of Russian metals, global supply chains have had to diversify. The EU has turned to alternative suppliers, especially in countries like Canada, Australia, and countries in Africa, but the transition is not without challenges. Countries like Indonesia and the Philippines have seen increased demand for nickel, but supply chain issues, including logistical bottlenecks and increased global competition, have led to delays and higher prices. Similarly, palladium, which Russia supplies in large quantities, is now being sourced from South Africa and other non-Russian suppliers, but again, this has increased pressure on global supplies.

China, already a dominant player in the metals and minerals market, has seen its influence grow as the EU and other regions look for new sources. China is a key player in the production and processing of rare earth metals, which are crucial for electronics and green energy technologies. The war in Ukraine and the EU's sanctions on Russia have further cemented China's role as a critical partner in global supply chains for these materials, creating new geopolitical dynamics around resource control.

The sanctions on Russian metals and minerals have led to significant price volatility in global markets. Nickel prices, for example, surged following the disruptions in Russian supplies, making the cost of products like EVs and energy storage systems more expensive. The automotive sector, in particular, is feeling the pinch, as the price hikes for palladium and platinum have increased production costs for vehicles equipped with catalytic converters.

In response to these challenges, industries worldwide are placing greater emphasis on recycling, substitution, and innovation. For instance, automotive manufacturers are exploring ways to reduce reliance on palladium in catalytic converters, and companies are increasing investments in technologies to recycle aluminum and other metals to mitigate supply chain risks.

The disruption of Russian metals exports has also reshaped the geopolitical landscape. The EU's move to cut off Russian supplies has forced nations to rethink their sourcing strategies, leading to closer ties with countries outside of Russia, including the U.S., Australia, and African nations. At the same time, the growing demand for critical minerals, driven by the transition to renewable energy and electric vehicles, has sparked competition for these resources, especially as demand for green technologies continues to rise.

In the long term, this shifting market is likely to fuel investments in sustainable mining practices and alternative materials. For example, countries may seek to develop new extraction methods that minimize environmental impact, while industries focus on expanding recycling efforts to reduce dependence on mined raw materials. Moreover, the focus on ethical sourcing will likely increase, with more attention paid to environmental and human rights standards in global supply chains for metals and minerals.

The war in Ukraine and the EU's cut-off of Russian metal exports have deeply impacted the global metals and minerals market, leading to supply shortages, price volatility, and shifts in global trade patterns. The EU’s sanctions on Russian aluminum, nickel, and palladium, in particular, have forced industries to find alternative suppliers, often at higher costs. These disruptions have sparked a renewed focus on supply chain diversification, recycling, and substitution, while also highlighting the increasing geopolitical influence of countries like China. As the world continues to transition to cleaner energy technologies, the demand for critical minerals will only grow, making the resilience and sustainability of supply chains a key concern for the future.

Agenda 2: Promoting and ensuring technological progress and development for fair global trade.

5. Historical context

5.1 From Traditional Trade Routes to Digital Trade Platforms.

Throughout history, trade routes have played a vital role in linking civilizations and fostering both economic and cultural exchanges. One of the most famous examples is the Silk Road, established during the Han Dynasty around 130 BCE, linking China to the Mediterranean through Central Asia and the Middle East. This network eases the trade of silk, spices, paper, and other precious goods, also playing a role in the sharing of ideas, technologies, and even diseases such as the plague. Between the eighth and seventeenth centuries, the Trans-Saharan trade routes connected sub-Saharan Africa with North Africa and the Mediterranean. These trade routes played an important role in the trade of gold, salt, and enslaved people. The success of empires during that time such as Mali, especially under the leadership of Mansa Musa, who is famous for his immense wealth, largely stemmed from their clever management of trade networks. These routes often depended on slow and labor-intensive transportation methods, such as camel caravans, and were vulnerable to environmental and political changes, which affected their efficiency and accessibility.

The digital age has really changed the way we trade, creating amazing opportunities for connection and efficiency like never before. Platforms such as Alibaba and Amazon show us how technology has transformed commerce, allowing businesses to connect with global markets more easily. During the COVID-19 epidemic, digital portals played a crucial role in helping Indian exporters keep their businesses alive by allowing them to export textiles and spices globally, even when traditional trade routes were unavailable. Additionally, technologies such as blockchain serve as modern answers to the age-old demand for trust and transparency in trade. In the 16th century, the Portuguese and Dutch empires used written contracts and intermediaries to help ensure that their maritime trade transactions were fair. Blockchain technology now provides secure and verifiable records of transactions, removing the need for intermediaries. Even with these advancements, digital trade highlights disparities—numerous regions, particularly parts of Sub-Saharan Africa, are missing the necessary infrastructure to participate in the global digital economy. To close this gap, we need countries to work together to build digital infrastructure, making sure that the benefits of the technological revolution reach everyone, similar to how trade routes once aimed to link different parts of the world.

5.2. The industrial revolution, the rise of e-commerce and blockchain

Talking about the industrial revolution, it is not a secret that steam machines have helped the business owners to manufacture vast amounts of goods in a short time. Before the invention of steam engines, firm owners had to employ hundreds of work workers to produce the same amount of goods. The industrial revolution has accentuated capital accumulation which plays a crucial role in the development of technology. Without capital accumulation, firm owners or engineers cannot find sufficient time and investment to improve their production line. With the invention of the production line Henry Ford, production line workers had found the chance to develop themselves in one specialty. When we discuss the production line of Henry Ford, I want to mention Adam Smiths' division of labor theory. The text below is apart from his famous book "An Inquiry Into the Nature and Causes of the Wealth of the Nations" where he rooted modern day capitalism.

"To take an example, therefore, from a very trifling manufacture; but one in which the division of labor has been very often taken notice of, the trade of the pin-maker: a workman not educated to this business (which the division of labour has rendered a distinct trade), nor acquainted with the use of the machinery employed in it (to the invention of which the same division of labor has probably given occasion), could scarce, perhaps, with his utmost industry, make one pin in a day, and certainly could not make twenty. But in the way in which this business is now carried out, not only is the whole work a peculiar trade, but it is divided into a number of branches, of which the greater part are likewise peculiar trades. One man draws out the wire, another straights it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head; to make the head requires two or three distinct operations; to put it on is a peculiar business, to whiten the pins is another; it is even a trade by itself to put them into the paper. And the important business of making a pin is, in this manner, divided into about eighteen distinct operations, which, in some manufactories, are all performed by distinct hands, though in others the same man will sometimes perform two or three of them. I have seen a small manufactory of this kind where ten men only were employed, and where some of them consequently performed two or three distinct operations. But though they were very poor, and therefore but indifferently accommodated with the necessary machinery, they could, when they exerted themselves, make among them about twelve pounds of pins in a day. There are in a pound upwards of four thousand pins of a middling size. Those ten people, therefore, could make among them upwards of forty-eight thousand pins in a day. Each person, therefore, making a tenth part of forty-eight thousand pins, might be considered as making four thousand eight hundred pins in a day. But if they had all wrought separately and independently, and without any of them having been educated to this peculiar business, they certainly could not each of them have made twenty, perhaps not one pin in a day; that is, certainly, not the two hundred and fortieth, perhaps not the four thousand eight hundredth part of what they are at present capable of performing, in consequence of a proper division and combination of their different operations."

E-commerce, on the other hand, represents a turning point for capitalism and trade. The idea of buying goods from the comfort of your own home was initially seen as unorthodox. However, with the rapid rise in internet popularity, it took just 20 years to overshadow traditional shopping habits. Today, it is evident that customers prefer online shopping over visiting malls or physical stores. With the advancement of global supply chains, reduced delivery times, and the convenience offered by shopping platforms, it's no surprise that online shopping has become the preferred choice.

However, like any online application, e-commerce comes with its drawbacks, such as the high commission rates set by marketplaces like Amazon, eBay, and Trendyol. Initially, digital marketplaces seem more accessible for vendors compared to opening a physical store on a busy city street. Vendors don't need to pay rent, water, electricity, or other utility bills. Additionally, they avoid the hassle of physically opening a store and hiring employees. While these savings can offset the high commission rates, in this specific sector, small individual companies often operate as a monopolistic entity to maximize profits. Acting as a monopoly or oligopoly inevitably increases the risk of inflation.

As is well known, inflation is calculated based on the percentage change in the price of the same good over a given period. If online shopping contributes to inflation—due to the shift in shopping habits toward higher-priced goods, with the trade-off being the convenience of shipping and saving time from avoiding traditional stores—it would not be surprising to see prices rise further.

In the modern era of the internet, micromarketing is one of the most important strategies that firms use to advertise their product. In order to have a successful micromarketing strategy, companies have to collect data from their customers. However, in order to collect data, firstly companies have to convince their customers to sign up for their website and allow the data collection. Excelling in data collection for firms, requires time and trust to the customers. Because of those challenges, most companies prefer to buy leaked data or trade data with other firms. Since buying and trading confidential data with firms, when those actions are detected by prosecutors or police, it is no surprise for companies to face law enforcement. Unfortunately, sanctions or fines to companies just take a small portion of their income compared to what they earn from micro marketing strategies.

On the other hand, all data leaks are not firm based. Since all electronic and Wi-Fi connected devices can be hacked, databases can be hacked too. So firms are responsible for securement of the data that they are collecting from their customers. Hackers would penetrate highly confidential databases or servers to leak the data and sell it to others using dark web marketplaces.

Blockchain technology would perfectly help global supply chains in the context of tracking the product from its production line. Since blockchain operates on an immutable ledger where nothing can be deleted or altered, it allows the final customer to access every detail about a product—ranging from the materials used in its production to the exact date and location of manufacturing. IOT (Internet of Things) with collaboration of blockchain, plays a crucial role in mentioned technology.

Moreover, by lowering fraud and guaranteeing ethical standards compliance, blockchain and IoT help to enable fair worldwide trade. The decentralization of blockchain guarantees that no one entity may control the data, so claims such fair labor standards, organic certification, or sustainable sourcing becomes simpler. This degree of transparency not only promotes trust between consumers and companies but also makes manufacturers and suppliers accountable for following moral and environmental standards.

Potential cost savings and efficiency increases are still another main advantage. Blockchain automated smart contracts can simplify customs clearance, inventory control, and payments as well as other operations. For instance, a smart contract might automatically pay the supplier when IoT sensors verify that items have been delivered in correct condition, therefore removing delays and lessening reliance on middlemen.

Furthermore, IoT combined with blockchain might help close the technical divide between rich and poor countries. Small and medium businesses (SMEs) in developing countries can access worldwide markets without the concern of exploitation or discrimination by means of a clear and trustworthy infrastructure for commerce. Blockchain guarantees fair treatment for all supply chain players, regardless of their location or economic level, therefore fostering inclusion and fair economic development.

6. Technological Advancements in Trade Facilitation

6.1. Role of e-commerce, trade tracking and digital payment systems

With many cases proving their transforming power, e-commerce, trade tracking, and digital payment systems now play a critical part in advancing fair and inclusive global trade. Without requiring major physical infrastructure or middlemen, e-commerce platforms like Alibaba in China and Amazon have offered small and medium-sized businesses (SMEs) access to international marketplaces. For instance, Jumia, the biggest e-commerce site in Africa, lets local companies sell their goods not just around but also to international consumers, therefore generating possibilities for entrepreneurs in areas traditionally left out of world trade. Likewise, rural Indian artists can sell handcrafted goods straight to customers overseas by means of websites like Flipkart and Etsy, therefore removing conventional

obstacles including limited market access or exploitative middlemen. These platforms guarantee more fair distribution of trade possibilities by bridging gaps between customers and suppliers.

Technologies for trade tracking improve fairness and openness in world trade even more. One such shining example is IBM's TradeLens blockchain-based technology TradeLens lets companies monitor goods in real-time by digitizing and safeguarding shipping data, therefore guaranteeing that items are ethically produced and free from counterfeit. Customers in Europe, for example, can confirm whether their Ethiopian coffee was grown under fair trade policies. By removing financial obstacles, digital payment systems help to augment these initiatives. With Kenya's M-Pesa, a mobile money system, payments for rural traders have been transformed and quick, reasonably priced transactions even without access to conventional banking are made possible. Likewise, Nigerian startup Paystack enables easy cross-border payments, therefore enabling African companies to trade internationally free from the exorbitant fees connected with traditional banking systems. These technologies together empower SMEs, guarantee ethical behavior, and support fair competition—all of which show how technology development may provide a fairer world trade system.

5.2. Automation and AI

Automation and artificial intelligence (AI) are changing global trade by making supply lines more efficient, improving production, and helping people make quicker decisions. Automated systems like robotic assembly lines have lowered production costs and made work more efficient. This helps businesses meet global demand at affordable prices. For example, car companies use robots in workshops to do repetitive jobs like welding and putting parts together, which helps make things more accurate and faster. AI technologies, like predicting trends and demand, help businesses manage their inventory better and cut down on waste. For example, big online retailers like Amazon use AI technology to forecast what customers will want and to streamline their supply lines, making sure products are delivered on time around the world. These advancements not only boost output but also make global trade more accessible by lowering operational barriers for businesses, including small and medium-sized enterprises (SMEs).

The growing use of technology and AI raises worries about inequality and fair access, particularly in developing countries. Developed countries with modern technology gain a lot of advantages, but many developing countries struggle because they have fewer resources, skills, and access to this technology. For instance, companies in Germany or Japan use advanced AI to improve their industrial processes, while smaller producers in sub-Saharan Africa often depend on manual labor because they lack the necessary technology. This digital gap can worsen the current inequalities in global trade. To solve this issue, governments and foreign groups should focus on efforts that support technology development in less developed areas. Investing in digital infrastructure, education, and partnerships for technology-sharing

can help close the gap. This will make sure that the advantages of automation and AI are shared fairly among all countries

6. Key challenges upon the topic

6.1. Cybersecurity Concerns in Global Trade

Increasing cybersecurity threads for the global trade ecosystem are shown by publicized events affecting operations and eroding confidence. Targeting Maersk, one of the biggest shipping firms in the world, the NotPetya ransomware attack in 2017 crippled its IT system and stopped activities at ports all over. This one hack caused an estimated loss of over $300 million and compelled the business to rebuild its IT systems from nothing. Comparably, the 2020 SolarWinds hack exposed private trade and operational data by compromising the Orion platform utilised by government agencies and global companies. These events show how easily cyber defection may spread across linked trade systems and cause major operational, financial, and reputation damage. The stakes have never been more as global trade depends more on digital systems and platforms.

Companies have to take a various strategy to increase the strength of their cybersecurity defences in order to offset these hazards. This covers funding advanced threat detection and prevention technologies including artificial intelligence for spotting anomalies and blockchain for supply chain data security. Reducing threats requires consistent vulnerability assessments, software upgrades, and strong encryption methods. Encouragement of cybersecurity awareness among staff members can also help to avoid human mistakes sometimes acting as access points for hackers. Companies also have to improve their incident response strategies to reduce financial losses and downtime in case of a cyber attack. Another remarkable element is industry-wide cooperation since sharing threat intelligence enables companies to keep ahead of changing cyber risks.

More broadly, nations have to actively address cybersecurity issues if they are to guarantee fair and safe world trade. By means of international frameworks and standards for cybersecurity in trade, governments can foster cross-border collaboration. To create trade systems, combining resources, knowledge, and technology calls for public-private partnerships. Particularly for underdeveloped countries, capacity-building projects are absolutely essential to close the cybersecurity , guarantee fair involvement in world trade. Investing in education and infrastructure helps nations enable companies to use more robust security policies. Countering cybersecurity risks and creating a safe environment for technology advancement in worldwide trade depends ultimately on a mix of firm-level readiness and international collaboration.

6.2. Data collection and ethical concerns

The increasing reliance on data collection in the trade has also equipped businesses with the tools necessary to analyse consumer behaviour, build the best supply chains, and make business processes more efficient. Nevertheless, this dependence has also triggered many ethical issues in the sphere of privacy, consent, and data security. For example, the 2018 Cambridge Analytica scandal exposed the improper use of millions of Facebook users' personal data to sway political outcomes. Similarly, multinational corporations often gather vast amounts of consumer data across borders—sometimes without obtaining explicit consent—exposing sensitive information to misuse or unauthorised access. Such practices undermine trust between businesses, governments, and individuals, raising questions about accountability and fairness in global trade practices.

Companies have to implement ethical data collection practices to help mitigate these issues while at the same time maintaining legal compliance as data protection laws change. For transparent policies on data use to be an effective starting point, they must allow consumers and stakeholders to see how their data is being gathered, stored, and used to share it. Companies should also focus on data minimisation by collecting only the data required for trade-related purposes. Privacy measures based on technologies such as differential privacy and encryption can protect confidential data and alleviate the risk associated with misuse or breaches. Internally, organisations need to foster a culture of accountability by training their employees on data ethics and adhering to industry best practices. Routine audits and checks on compliance are critical to verifying that companies remain compliant with global data privacy regulations, including the European Union's General Data Protection Regulation (GDPR).

Governments and international bodies have an equal stake in the ethical dilemmas of data collection in global trade. To prevent the abuse of personal data, policymakers must impose explicit regulations and enforcement procedures. Facilitating cross-border accords on data privacy frameworks (e.g., the OECD Principles on the Protection of Privacy) can contribute to the creation of coordinated practices among jurisdictions. Moreover, capacity-building initiatives can help the developing countries establish strong data governance frameworks to avoid their unwanted disadvantage. Ethical issues also need to extend to new technologies, such as artificial intelligence, where trade-related data biases can lead to further entrenched inequality. By encouraging a global culture of ethical data collection and management, stakeholders can promote fairness and trust while advancing technological progress in global trade.

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