Developing of De-Globalization Steel Industry Framework: Cross cases of Egypt

Khaled El Sakty[1] **Mona Mohamed Saad**[2]

Abstract

Steel drives worldwide economic growth. De-globalization, trade disputes, wars, and the COVID-19 pandemic have affected steel industry profitability and trade. This study examines deglobalization's consequences on Egypt's steel industry. The study examines the relationship between de-globalization and transport, the steel industry, Egypt's steel industry, and the construction of a model for de-globalization in the steel sector. Target population were 250 individuals and we received 210 (84% response rate), which is used to compute the starting sample. Exploratory factor analysis was used to reduce dimensions. This analysis was applied on two national firms. Managers outnumbered senior directors. Anti-dumping, safeguard, Russia-Ukraine Conflict, and COVID-19 affect iron and steel commerce, according to the study. The report emphasizes the steel industry's worldwide impact. Survey data used structural equation modelling and secondary data were analyzed using multiple linear regression models. The data show that **anti-dumping reduces exports and increases imports** and net profit. COVID-19 and the safeguard promote imports and profit. The Ukrainian conflict hurts output but not exports, imports, or net profit. De-globalization ultimately affects the steel industry.

Keywords: De-globalization, Steel Industry, COVID-19, Profitability, Antidumping, Safeguard, Russia-Ukraine war.

[1] Prof . Dr., Arab Academy for science and technology and martitime transport, cairo ,Egypt

[2] Research , Arab Academy for science and technology and martitime transport, cairo ,Egypt

تطوير العولمة فى قطاع صناعة الحديد والصلب بمصر

صناعة الصلب تقود النمو الاقتصادي في جميع أنحاء العالم. و أثرت ازالة العولمة والنزاعات التجارية والحروب ووباء COVID-19 على ربحية صناعة الصلب والتجارة.

تبحث هذه الدراسة في عواقب تراجع/ازالة العولمة على صناعة الصلب في مصروالعلاقة بين تراجع العولمة والنقل ، وصناعة الصلب عامة، وصناعة الصلب في مصر خاصة، وبناء نموذج لتقليص العولمة في قطاع الصلب. كانت المجموعة المستهدفة 250 فردًا وتلقينا 210 (معدل استجابة 84٪) ، والتي تُستخدم لحساب عينة البداية.

تم استخدام تحليل عامل الاستكشاف لتقليل الأبعاد و تم تطبيق هذا التحليل على شركتين وطنيتين. فاق عدد المديرين كبار المديرين.

تشير الدراسة إلى أن مكافحة الإغراق والوقاية والصراع بين روسيا وأوكرانيا و وباء COVID-19 تؤثر على تجارة الحديد والصلب. يؤكد التقريرعلى تأثر صناعة الصلب عالمياً. استخدمت بيانات المسح نموذج المعادلات الهيكلية وتم تحليل البيانات الثانوية باستخدام نماذج الانحدار الخطي المتعددة و تظهر البيانات أن رسوم مكافحة الإغراق تقلل الواردات وتزيد من الصادرات وصافي الربح و بان وباء COVID-19 و رسوم الحماية تعزز الواردات والأرباح.

اضرارالصراع الأوكراني بالإنتاج ولكن دون ضرر بالصادرات أو الواردات أو صافي الربح. اخيرا بيان تأثير ازالة العولمة في النهاية على صناعة الصلب.

الكلمات المفتاحية: إزالة العولمة، صناعة الصلب، وباء كوفيد 19، الربحية، رسوم الإغراق، رسوم الحماية، الحرب الروسية – الأوكرانية.

Introduction

Steel is an important material utilized in a variety of sectors, including automobiles, aircraft, vessels, and building construction. The global steel business is a massive technical complex that is important to the global economy, infrastructure, development, and growth rates. Steel, according to the Global Steel Association, is the most recyclable material, with around 500 metric tons recycled each year (World Steel Association, 2014) .

Nevertheless, the steel industry supply chain prices are influenced by "ferrous scrap" from end-of-life objects, which steel mills globally purchase from the largest scrap hubs, mostly in the United States and the United Kingdom. The World Trade Organization (WTO) regulates international commerce and promotes trade negotiations among its 164 members. It's primary Mission is trade facilitation, which ensures safe supply and enhances choices for finished goods, components, raw materials, intermediates, and semi-finished products in order to make manufacturers and exporters accessible to global markets (World Trade Organization, 2019).

The WTO normally adopts decisions by consensus and with legislative permission, and the WTO Dispute Settlement Board analyses agreements and commitments in trade disputes to ensure that states' trade policies conform to them. To encourage international trade, the WTO is lowering customs barriers (World Trade Organization, 2019).

President Donald Trump slapped a steep levy on steel and aluminum imports in March 2018 to protect the US's national security, which had deteriorated due to decreased domestic steel and aluminum output. According to Martin, in 2018, this trend resulted in de-globalization, which reduced integration and

reliance among global companies. Egypt's steel exports to the United States increased from $10.3 million to $103.3 million as a result. Egypt, on the other hand, was one of 12 countries that the US Department of Commerce advised penalizing with high penalties for suspected dumping or unfair trade. Deglobalization, trade wars, COVID-19, and conflicts have all had an impact on the global steel sector, resulting in a reduction in trade and profitability for steel manufacturers. As a result, it's critical to look at the influence of de-globalization on the steel sector, notably in Egypt.

The initial goal of this research is to investigate the notion of de-globalization and its influence on the global steel sector. The second goal is to investigate the impact of de-globalization on Egypt's steel sector. Egypt is one of Africa's greatest steel producers, and de-globalization has had a huge influence. The third goal of this study is to look at the link between deglobalization and transportation in the steel sector. The steel industry's transportation costs, logistics, and supply chain management will be examined as a result of de-globalization. The research will also look at the influence of de-globalization on Egypt's transportation infrastructure and how it has impacted the steel sector. Lastly, the fourth goal is to provide a steel framework model for deglobalization .

The model will be developed to comprehend the influence of de-globalization on the steel sector and its consequences for Egyptian steel producers. The framework model will aid in identifying the primary drivers of de-globalization, the implications of de-globalization on the steel industry, and the methods that steel producers may use to offset the impact of de-globalization on their operations. Ultimately, the goal of this study is to improve knowledge of the effect of de-globalization on the steel sector, especially in Egypt. The study results may

assist policymakers and steel producers in Egypt and other countries in developing effective strategies to address the problems presented by de-globalization .

In this research study, both primary and secondary data collection methods will be utilized to develop the empirical study. Secondary data will be used for research purposes, while primary data will be used to gather specific information related to the research objectives. The secondary data will be collected from various sources such as books, research papers, journals, and online articles related to the topic of organizational change management. The primary data, on the other hand, will be collected through surveys and interviews. The research population for this study comprises managers and VPs from El-Marakby and Ezz Steel companies. El-Marakby has 50 managers and VPs, while Ezz Steel has 300 managers and VPs, resulting in a total of 350 members in both companies. The target population for this study was 250 individuals, selected based on their position and expertise in the field of organizational change management. We were able to receive responses from 210 individuals.

Research Hypotheses

H1: Antidumping has a direct impact on the production of steel in Egypt.

H2: Antidumping has a direct impact on the trade of steel in Egypt.

H3: Antidumping has a direct impact on the steel industry's profitability.

H4: Safeguard has a direct impact on the production of steel in Egypt.

H5: Safeguard has a direct impact on Egyptian steel trade.

H6: Safeguard has a direct impact on the steel industry's profitability.

H7: COVID-19 has a direct impact on the production of steel in Egypt.
H8: COVID-19 has a direct impact on the trade of steel in Egypt
H9: COVID-19 has a direct impact on the profitability of the steel industry
H10: Russia-Ukraine has a direct impact on Egyptian steel production.
H11: Russia-Ukraine has a direct impact on the trade of steel in Egypt.
H12: Russia-Ukraine relations have a direct impact on the steel industry's profitability.

Theoretical Framework

The framework is to discuss the effect of different independent variables as well as the dependent variable on steel industry. The purpose of the research is to examine the relationship between the different independent variables "Antidumping", "Safeguard", "COVID 19", Russia – Ukraine and the dependent variable "Steel industry."

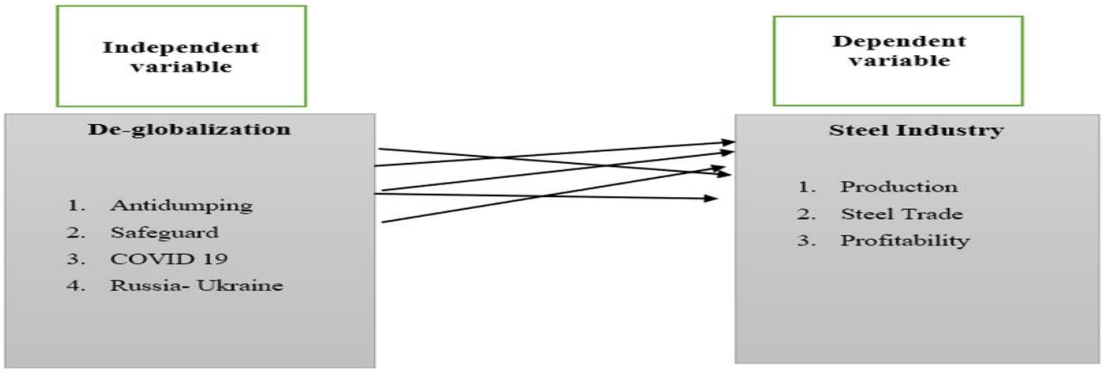

Figure 1. Study Framework
Source: Based on World Trade organization reports

Data Collection and methods

The research population for this study will mainly comprise the managers of the steel companies in Egypt. The questionnaire will be sent to different employee layers, ranging from VPs to junior management, in Egyptian steel companies to analyses the response rate. The researcher will target two of the largest steel companies existing in Egypt - El-Marakby Steel and Ezz Steel Company due to the specialization and complexity of this industry.

The sample will include 50 managers and VPs from El-Marakby, and 200 managers and VPs from Ezz, for a total of 250 members in both companies and the researcher received 210 responses. To collect data for this study, the researcher will rely on both primary and secondary data. Primary data will be collected through a survey and interviews using scaled and open-ended questions distributed across employees at the steel companies.

Additionally, the researcher will utilize several internal reports from El-Marakby Steel and Ezz as secondary data sources. The primary data collected from the different sources will be analyzed using SPSS software, and the secondary data collected from different resources will be used in an organized way that will help the study yield better results.

Research Limitation

This research is limited to the steel industry and mainly Egyptian steel companies. The researcher targeted certain patterns for specific staff starting from seniority levels as VPs of the targeted companies until the junior management staff, excluding technicians and labourers of those companies from the researcher's sample .

Literature Review

The Rise of the Steel Industry Globally

Modern steel is crucial to the nineteenth century and industrial revolution (Bambach, 2012). The mass manufacture of steel by Henry Bessemer changed industrialization, sweeping throughout Europe and the US (Bambach, 2012). Mergers during the 1890s downturn consolidated the American steel sector. By 1901, the U.S. steel firm became the world's largest producer. In the 20th century, blast furnaces melted iron ore, open-hearth furnaces reduced it, and basic oxygen furnaces created in 1954 in Austria enhanced productivity (Ki & Lee, 2017). Imported raw materials supplied molten steel and port-based mills in South Korea and Japan. Huge ships exported cheaper steel items. Kenneth Iverson embraced German electric arc furnace (EAF) technology in the 1980s (Ki & Lee, 2017).

The Evolution of the Modern Steel Industry

Within a short period, steel had become a necessity for the development of every country, with several countries starting to produce their steel or import raw materials (Ki & Lee, 2017). With the shortest period, China became the world’s largest steel industry, with other countries majoring in production during the shift period of local iron ore to imported iron ore, leading to the increased cost of raw materials (Bambach, 2012). Steel had changed the world's outlook, and like most other countries in the 20th century, manufacturing became one of the most significant sectors in the Egyptian economy. It continues to thrill even in the 21st century (Ki & Lee, 2017).

The Bank of Egypt loaned Egyptian firms to boost output in the 1920s and 1930s (Tarek et al., 2018). Egypt was cut off from European commodities after the Second World War, which boosted local production. Most big industrial firms were nationalised in the 1950s (Tarek et al., 2018). Iron and steel

were essential to Egypt's economy at the start of the 21st century when the government sold a substantial share in manufacturing to the private sector (Tarek et al., 2018). From 1991 to February 2020, steel output increased from 404.82 metric tonnes to 774.25 (Tarek et al., 2018). Steel affects infrastructure, housing, automobile, construction, and consumer goods (Tarek et al., 2018). The Egyptian steel industry's reliability makes its expansion important to the economy (Tarek et al., 2018).

Eighty percent of Egypt's steel sales come from rebar (Khalid, 2011). The country cannot produce enough steel billets to fulfil rebar demand. 53.5 percent iron concentrations are inadequate for 73%. (Khalid, 2011). It has caused annual steel billet imports of roughly 1.2 billion metric tonnes (Khalid, 2011). The steel life cycle shows that steel may be utilised as a finished product, raw material, or rubbish, making it important to research. Steel also affects worldwide economic growth, infrastructure, and development. (Khoo et al., 2012)

This thesis will explore steel's importance, its life cycle, and its role in the global economy to determine the variable that most affects steel manufacturing costs. Around 65% of vehicles are steel. Steel is the most durable and cost-effective material for the application and may be made in different ways to meet safety standards. All old or destroyed cars are shredded and crushed into "scrap materials" for steel melting (Broek, 2014). Steel is the principal "building material" with bond in the construction and framework sectors, meeting worldwide base and development needs. Steel is recyclable and produces useful by products and waste energy. So, the world economy and economic future depend on the steel industry (Anon., 2015) .

Steel production

The steel manufacturing process begins when ferrous scrap metal purchased from a nearby metal recycling yard arrives by rail car or truck and is unloaded by large overhead cranes. Scrap metal is loaded into a "charge bucket" and brought into the melt shop, where it will go through the melting process (Renzulli et al., 2016).

The first melting step begins when the scrap is unloaded from the charge bucket into the electric arc furnace (EAF). The EAF uses electric power to heat the scrap to over 3,000 degrees Fahrenheit and melt it into liquid form. In the process, slag forms and floats to the top of the molten steel with oxidised impurities, where it is discarded (Renzulli et al., 2016).

De-Globalization

Deglobalization, which refers to the reduction in integration and dependency among enterprises worldwide, has intensified during the Great Depression of the 1930s and the Great Trade Collapse of the 2010s. Experts have attempted to identify the main causes and effects of deglobalization by contrasting the two key eras when it took place. Democracies supported free trade in the 1930s, while authoritarian self-sufficiency programmed had an impact on deglobalization. Political organization was crucial in the 2010s, but in recent years, choices made by democracies, such as Brexit and President Trump's election, have led to deglobalization globally. These findings were discussed by Mervyn Martin and Livesey in their respective studies (Martin, 2018; Livesey, 2018).

Drivers of Deglobalization

Globalization and deglobalization are influenced by factors related to trade, economic, political, cultural, social, and

technological dimensions. The growth of globalization and its associated benefits are also the reasons for its decline. The election of Donald Trump as the president of the USA is considered the beginning of deglobalization as he convinced Americans that other countries were taking away their employment opportunities, thus posing a threat to globalization (Reznikova et al., 2018) .

The president started by developing sabotage to the globalization by imposing free trade restrictions, for example, the USA withdraws from the Trans-Pacific Partnership (TTP) and imposing high import tariffs. The flow of migration has increased cases of deglobalization. Before the start of World War 1, Max Weber, a Germany scholar introduced an argument explaining why globalization was affected. In this case, deglobalization brought a lot of advantages to people of inferior cultures (Prashantham et al., 2018) .

Max Weber's first significant study was on Polish farm labourers migrating to East Germany. Some nations, like France, exploited migration to brand populism against Germans. (Reznikova et al., 2018). The lack of immigration in Japan is unique among industrialized nations, and it is related to the fear of losing jobs and the increase in welfare costs. The distributive impacts of high immigration mostly fall on the middle and lower classes, causing the loss of income and creating competition. Xenophobia, as seen in South Africa, has also contributed to the deglobalization of the country (Dür et al., 2019).

Capital flows are always considered the chief motive for deglobalization. It seems anonymous and international when capital is swiftly moving; complications are only brought when capital retreats, as people are left wondering the source of delay. There has been a renationalization of finance since 2008,

mainly through regulatory concerns (Reznikova et al., 2018). After migration, the EU-UK financial flow pact is a priority. Capital flows help. Human capital and financial openness boost capital flows in receiving countries. Undeveloped business frameworks have consequences. Before Brexit, the EU adopted equivalence. (Dür, 2019).The regime's organisations played the EU's job. The EU's choice to avoid "unfairly regulated foreign companies" is supported by the US's straightforward legislation. Financial flows are information-sensitive. Financial reports assist explain an economy, which underpins international politics. Financial institutions caused deglobalization after the 2008 financial crisis (Reznikova et al., 2018). Information is seen as a weapon and an instrument for national power. Microsoft, Google, Amazon, and telecom companies dominate interaction systems and complicated software that connect the information economy (Dür et al., 2019).

Edward Snowden's National Security Agency revelations have shown the worldwide network's strength and intelligence (Dür et al., 2019). Who legislates regulations on the linked system's dependability and whether they benefit all nations has been questioned. Globalization followed British laws in the 19th century. The US was in charge of currency arrangements and protecting the international system throughout 20th-century globalization (Reznikova & Ivashchenko et al., 2018). International organizations' access to financial markets depends on domestic banking system stability .

Factors affecting De-globalization

Deglobalization affects everyone. Deglobalization impacts global market cooperation. . Most countries generate varied items to suit global demand as no nation is self-sufficient. Globalization disrupts commerce, hence governments will

sabotage and oppose it. Countries may limit their resources to limit trade competition. Several nations manufacture raw resources. International market limitations or reforms may have a major impact on national economies (Holm, 2019). Global de-integration increases products and services, lowering multinational companies' profit margins. Deglobalization reduces global market size and international peace. The US's restrictions on Huawei cellphones' Android features have sparked a trade war between the two nations (Holm, 2019).

Integrating cultures from diverse nations promotes cultural values. Power players' control of international politics based on their nations' interests creates a wall between civilizations. Deglobalization makes weaker nations feel victimized, making them detest residents from wealthy countries. Disintegration of cultures divides individuals, making it harder for some to work abroad. Several nations discontinued female circumcision and girl education when globalization was successful. Since deglobalization encourages cultural preservation, certain practices will no longer be considered improper. If international politics aren't equal, nations won't do the same or respect other cultures (King, 2018). International politics instills hatred between Christianity and Islam, which is unfounded. Developed nations have sophisticated universities. Foreign students would utilize their lessons to obtain job skills (Holm, 2019). Their damaged attitude will also make them undesired in Christian nations. To help kids find international possibilities, schools should be calm and confident. Terrorist-related American school shootings have triggered panic attacks and distress in pupils (Holm, 2019).

Deglobalization harms kids and education. Several nations have severe migration regulations and demand a lot of paperwork from foreigners (Holm, 2019). Migration may be positive, but it

may generate drug trafficking, terrorism, or crime. Foreigners visited developing nations to promote education.
Deglobalization's reality makes it hard to persuade people. Understanding and globalization are necessary for improved education. The fragmentation of nations leads businesses that invest in inexpensive foreign labour to fail. If migration is unrestricted, local businesses may sell more because immigrants expand the market. Deglobalization may have contributed to crime and terrorism, but it is a two-way street (Holm, 2019).
Deglobalization increases terrorism because various cultures make it easier to detest others. Foreigners hate Americans because President Trump has curbed immigration. Muslims worldwide think the American government hates them. They also assume Christians hate Muslims because of prejudice (King, 2018). Due to the anticipated Mexican wall, the US government is having trouble policing drug trafficking. If the two governments worked together, it would have been easy. Nonetheless, migration limitations helped reduce crime and terrorism in the UK and US (King, 2018) .

Theories of Deglobalization

Liberalism doctrine lets many interests, people, and powers influence politics. . Liberalism theory assumes average player coherence. . These players consider economic wellbeing and personal and cultural preferences. Actors may choose positive-sum collaboration or zero-sum competition depending on their interests (King, 2018).
Military power, Actors may use a variety of authorities to advance their goals. These powers usually have military and economic might. Dynamic outcomes are relevant locally and globally. International politics refers to nations ". International

politics in somewhat varied liberalism nations are usually domestic, with significant forces influencing foreign policy. Foreign policy is tailored to the interests of dictators and powerful individuals, depending on the nation and subject. Liberalism captures reality, but its complexity makes it weak. Liberals say organizations aid collaboration in many ways (Holm, 2019). They formed a forum for discussing mutual interests and solutions. Several of these organizations decide global disputes and rule infractions.

Coercion drives globalization, according to realism theory. A sub-theory called "hegemonic stability (Holm, 2019). If it can and the advantages exceed the expenses, the "hegemon" will sustain the system. The arrangement becomes unstable when the hegemon loses authority to other states. Hegemonic deterioration has followed a pattern. When hegemony ends is unclear. Hegemony is "sticky" because economic order may outlive the nation. During an economic crisis, the hegemon loses power and the system fails (Holm, 2019).

Hegemonic stability's international systems mirror liberalism's institutions. . They reflect the hegemon's power and goals rather than their own. The institutions must produce a set of regulations similar to running a nation. Realism theory clearly shows how deglobalization and hegemony decrease together. The theory links global economic processes to strong countries, most lately the US .Deglobalization reduces the power of the most powerful nations in absolute terms and relative to others. Hegemonic decrease in realism theory promotes deglobalization (Holm, 2019).

Marxism addresses production, capitalism, and unequal distribution. "Capital by its nature rushes beyond every geographical barrier to conquer the entire globe for its market," Marx predicted global expansion. Marxists believe

deglobalization occurs because the trans-world link does not equalize profit and surplus accumulation possibilities. These are genuine capital development goals. Institutional and legal infrastructure create international surplus accumulation .
Neo-Marxists analyses transnational capital accumulation in peripheral and core nations in world-system and dependency studies (King, 2018). Neo-Gramscian emphasizes underclass issues in fighting global capitalism through conventional labor organizations and social groups including environmentalists, advocates, peasants, and peace activists. The theory limits power (King, 2018)

Process of De-globalization

Other subordination and dominance interactions include culture, country, sex, race, etc. American hegemony, racism, and western cultural dominance are not class processes of capitalism. Globalization cannot be the sole result of surplus accumulation. The theory examines globalization and deglobalization identities and meanings. Global armaments and military operations are used by countries for financial gains, competitiveness, and pre-capitalist civilizations. Like nationalism, social interactions have autonomy, according to the notion (King, 2018).
Since World War II, Europe has controlled war and peace worldwide. . Germany, UK, Belgium, Spain, and Portugal are examples. Europe dominated international politics during this period. After WWII, everything changed. Once Italy, Germany, and Japan were defeated, the Soviet Union and the US gained control. Europe was too weak to rule its colonies. Africa and Asia gained freedom. In 1945, 51 UN members became 155. (King, 2018). They indicate that most nations were ready to

cooperate in international affairs. International relations exist today because all nations want to participate.

Implementation of the Deglobalization

Deglobalization's return shocked the world. Most affected nations formed the 2000s international order (King, 2018). Reconstructing globalization failed because it relied on infrastructure investment to improve financial and commercial relationships. Trade protection, money flow control, and immigration restrictions hindered globalization. As international political organizations controlling globalization fought for their own interests, problems occurred. After regrouping, the international organization decided to use a quasi-judicial method to give confidential policy advice. As said, Trump's triumph was hailed as the start of globalization's death. Supporting evidence includes the Trans-Pacific Partnership's cancellation. He campaigned on this and made it a priority when elected. Asians make up two-thirds of the globe, but their increase is worrying. Population growth has driven this nation's residents to seek opportunities elsewhere. Deglobalization protects the US's international reputation by raising import levies. Trump campaigned on imposing tariffs of over 30% on all Chinese goods (Holm, 2019) .

Deglobalization might spark a trade war between the two countries. Deglobalization occurs when globalisation helps the rich more than the poor. Several countries charge above 25% VAT and 70% tariffs on the same product (King, 2018). Deglobalization is necessary because global business is unfair until borders are removed. Foreign politics benefits the powerful. Most countries function differently with distinct limits to obtain independence. Integration may not benefit all countries, thus deglobalization may be a better economic

development strategy. A unique method to global trade balance. Deglobalization is also used to protect local brands from multinationals. Consumers may choose for cheaper Chinese imports over local ones. South Africa is deglobalizing owing to immigration (King, 2018).

Immigration affects the domestic economy. Immigrants have increased labour market competition, denying lower-educated indigenous jobs. Substitutes are readily available, putting domestic workers at risk. Immigration threaten native culture. Pooling resources will improve living circumstances. Deglobalization may assist the South African population, which has many jobs but low living standards. Globalization pushes immigrants from developing countries to seek opportunities in wealthy ones (Holm, 2019). As states compete for their own interests, some nations have realized that globalization is getting harder to gain from. As long as greedy politicians rule international politics, deglobalization will flourish. International trade and investment may soon collapse. All international organizations, including the UN, must create a de-globalization strategy before it gets out of hand (Holm, 2019).

Application of De-Globalization in Steel industry in Egypt

Iron and steel are vital to economies in both developed and developing countries. The Egyptian industrial sector relies on it for capital intensity, production volume, and labor's contribution to national income. Politics and economics. Melting (scrap, DRI), casting, processing, and rolling steel coils to different thicknesses produces flat steel products. Automotive, housing, and construction industries use flat steel. As it has recently been employed in solar power stations and wind-powered electrical power producing plants, industrialized countries now consider this product as an essential raw material

for connecting many companies to it and expanding the least polluting industries.

Overview on Egypt's Steel industry

Egypt has 27 factories producing steel, including integrated, semi-integrated, and rolling factories, with a total production capacity of about 13.410 MT. Local annual consumption ranges between 8 and 9 MT, and the main producers are Ezz Steel Group, Beshay Steel Group, and Suez Steel Group. The types of steel produced in the market include carbon steel, stainless steel, and special steel. Steel prices are influenced by factors such as demand for housing and construction, population growth, and infrastructure projects. Demographics in Egypt support strong housing demand for the next decade, which translates into strong domestic demand for steel. The most important global events during 2018 and 2019 and their impact on the global iron and Steel industry in Egypt

In March 2018, the USA implemented a 25% tariff on steel and 10% tariff on aluminum imports, exempting some countries while imposing a quota on their imports. The justification for this was to protect USA national security, declining employment in the steel sector, and protecting USA producers from dumping by other countries. The decision had a ripple effect as the European Union, Turkey, and Canada also implemented similar measures. The following table shows the most important protective measures that have been applied in different countries as follows:

Table 1. Important protective measures that have been applied in different countries

Country	Product	Tariffs (Safe Guard)
U.S.A.	Rebars and flat steel products	25% of imports excluding few countries and 50% of imports

		from Turkey
Canada	Rebars and flat steel products	25%
Turkey	Rebars and flat steel products	25%
European Union	Rebars and flat steel products	25%

Source: World Steel Association, 2019

The impact on Steel industry in Egypt

Following the US decision to impose tariffs on steel and aluminum imports, many countries retaliated with their own tariffs. The tariffs have had a negative impact on Turkey's steel industry, causing a drop-in steel price. As a result, Egypt has become an attractive target for cheap steel imports due to its open market with no customs barriers. Egypt is also one of the few countries where demand for steel is growing, making it a desirable market for neighboring countries looking to absorb surplus production.

Threats that face the Egyptian steel industry

With the increase in protectionist measures by several countries, there is a surplus of 215 million tonnes of steel in the world market seeking alternative markets since 2018. The Turkish currency's collapse has allowed it to offer low-priced surplus production, estimated at 26 million tons, to the Middle East and North Africa market, including Egypt, which has no effective customs barriers and low shipping costs. Despite the presence of dumping charges on Turkish iron, exports to Egypt can still be easily made at current prices .

Economic challenges facing Egypt

The steel industry in Egypt faces three main challenges, the first being the high cost of natural gas, which is a basic production input. The second challenge is the high interest rate of lending, which has increased due to the Central Bank of Egypt floating the exchange rate in 2016, resulting in high inflation rates. This has led to increased borrowing interest rates for industrial companies, which affects their competitiveness. The third challenge is the trend of world trade protectionism, which has led to the imposition of tariffs and quotas by many countries to protect their national industries, resulting in a diversion of trade. These challenges have both domestic and international reasons.

A Case Study of Deglobalization on Egypt's Steel Industry

The iron and steel industry is crucial for economic and industrial development across the world, with a direct relationship between steel consumption and economic growth. Steel is widely used for different purposes, and the industry is the second largest globally, with a turnover of $900 billion USD. In the US, the industry directly employs 150,000 people and supports over one million indirect jobs. In Egypt, 31,000 people are directly employed in the industry, and many more are employed indirectly by related industries.

Types of Steel produced in Egypt

The steel industry in Egypt is crucial for the overall growth and development of the country's economy as it is interlinked with various other sectors. Rebar accounts for around 80% of all steel sales in Egypt, and there are different types of steel manufactured for the Egyptian market. According to the International Steel Organization, Egypt's iron output is expected

to reach its highest level in a decade, with production rates reaching 10.3 million metric tonnes by the end of 2021. Egypt was ranked 20th on the list of iron-producing nations worldwide, first in Africa, and third in the Middle East (Nikiforova, 2018).

Main Players in the Egyptian steel sector

Egypt has five main large steel manufacturing companies, which independently set their product prices based on the market's demand and supply. These companies are Ezz Steel, Beshay, Suez Steel, Egyptian Steel, and Marakby.

Ezz Steel

Ezz Steel is the largest independent steel producer in the Middle East and North Africa, with an annual production capacity of 7 million tons, including 4.7 million tons of long goods and 2.3 million tons of hot rolled coil. The company has four fully integrated steelmaking facilities in Egypt and produces over 450 grades of steel to meet various application requirements and international standards. Ezz Steel prioritizes new technologies and investing in the future, servicing customers, supporting employees, and managing a sustainable business. The company is committed to manufacturing high-quality steel products while maintaining control over product shape, composition, and surface quality.

Beshay

Beshay Steel Group is the largest private sector steel producer with a capacity of 4 million tonnes per year. They produce Direct Reduced Iron (DRI), billets, reinforcing steel, coils, and light sections to meet local and international market needs. Their employees are highly qualified, and the company uses the

latest technology for high-quality steel production, including an integrated plant for the discharge of gases from molten iron. They produce reinforcing steel from 10 mm to 40 mm diameter, rolls from 6 mm to 12 mm diameter, and a range of other products. The company uses hot billets from melting furnace factories to save energy and reduce environmental impact.

Suez Steel

Suez Steel Company is an integrated steel complex with a direct reduction plant, two melting shops, three rolling mills, and a cut-and-bend facility. They collaborate with top suppliers of equipment and raw materials and continuously invest in their facilities and resources to keep up with market expectations. Solb Misr has a reputation for producing high-quality goods, implementing efficient procedures, and pursuing continuous growth. They use ultra-high-charge electric arc furnaces to create molten iron and multipolishing continuous casting machines to produce steel.

El-Marakby

ElMarakby Steel has been in the steel business since 1960, providing high-quality steel products and services to customers. They started with trading and later transitioned to industrial activity, becoming an integrated steel production base. The company invested in a rebar rolling mill in 2006/2007, followed by a melt shop and continuous casting mill in 2016, and a new rolling mill in 2019, which has a production capacity of 400 KT per year of rebar and wire rods. Elmarakby Steel also has a lime calcination plant, an industrial gas unit, and steel fabrication and machining workshops for vertical integration. They supply iconic projects in Egypt and export to other countries. Rebars are used to improve the strength of concrete, and their

properties can be controlled through different elements and process parameters

Table 2. Comparison of iron and steel companies

Name of the company	Products	Production	Type of the company
Al Zamil Steel	- Structural Steel Buildings		Private
Beshay Steel	- Rebar - Wire rods - Profiles and angles - Steel billets		Private
Delta Steel Mill	- Rebar - Cold drawing - Wire mesh - Casting		Private
Ezz El Dekheila Steel Company	- Rebar - Wire rods - Welded wires - Hot rolled coil	5.8 Tons/year	Private
El-Marakby Group	Rebar Wire rods Billets	1.1Tons/years	Private
Egyptian Iron and Steel Co.	- Billets - Rebar - Wire rods	1.2MTons/year	Public
Egyptian Steel	- Rebar - Wire rods - Billets		Private
Kandil Steel	- Flat steel - Steel sheets		Private
AL. Madina al monwara	- Ribbed steel bars - Steel long square bars		Private

	- Steel long flat bars		
Misr National Steel Co.	Rebar		private
National Port Said Steel (NPSS)	Rebar		PP
Ashry Steel	Rebar	800K TONS	Private
Misr Steel (sister Co.)	Rebar	240K Tons/year	Private

Indicators of iron and steel industry in Egypt

The construction sector in Egypt is expected to grow by 9.7% in 2022 due to investments in infrastructure and smart cities. However, the automotive sector is facing challenges such as import laws, the semiconductor shortage, and inflation, leading to a predicted decline in sales and production. The machinery sector is expected to recover quickly, with digitalization and investment in renewable energy sources driving growth. The global supply chain disruptions have led to an evaluation of supply network flexibility and dependability.

Crude steel and DRI production

Figure 2.Crude steel and DRI production (trading economics)

It is evident that the production of iron ore by Egyptian firms will grow by 15%, but the production of iron in Egypt will fall by 5.6% in 2022.

Safeguard and Anti-dumping

The article discusses the difference between safeguard and anti-dumping measures in trade. Safeguard measures are temporary bans on imports to provide support to local industries negatively impacted by import surges, while anti-dumping measures are permanent tariffs on imports sold at unfair rates. The iron and steel industry is an important sector for infrastructure and is protected by both safeguard and anti-dumping measures. These measures aim to promote economic stability and competition in various sectors (World Trade Organization, 2019) .

Antidumping actions may be permanent, while safeguard measures are generally imposed for four years and are intended to offer temporary support to local industries threatened by import surges. After four years, safeguard restrictions are usually removed unless it can be shown that the import surge has resulted in significant damage. Anti-dumping measures aim to address unfair trade practices and promote fair competition in the steel industry and may be lifted if the foreign firm can demonstrate that they are not dumping the product (World Trade Organization, 2019).

The Criteria Applied to Anti-Dumping and Product Safeguards

The WTO governs global trade. WTO objectives include eliminating trade barriers and preventing trade discrimination. The WTO established trade measures including anti-dumping and safeguard measures to accomplish this goal. 1994 ended and 1995 began the antidumping treaty (World Trade

Organization, 2019). It sets the criteria and mechanisms for establishing whether dumped imports affect a domestic sector and what measures may be taken. 1995's safeguard agreement took effect in 1996. (WTO, 2019) .

WTO rules allow anti-dumping only if imported products are priced below their normal worth (World Trade Organization, 2019). If the exporting nation's domestic price is unknown, the customary figure may be the cost of manufacture plus an acceptable margin. If increased imports of a product cause substantial damage or threaten a domestic industry, safeguard measures may be taken. To establish whether antidumping or safeguard measures are necessary, WTO members must investigate (World Trade Organization, 2019). The WTO-compliant investigation must be fact-based. In conducting a safeguards investigation, WTO members must assess the number of imports of the product, the effect of imports on domestic prices, the impact on the local industry producing the same or directly competitive product, and any other relevant circumstances (World Trade Organization, 2019).

Egypt Imposed Anti-Dumping on Iron Steel in 2017 and Cancelled It Again In 2022. The WTO allows states to fight dumping if it harms domestic industry. Because of local companies complained that imports were overpriced, Egypt initiated anti-dumping investigations in 2017. After these examinations, the government found that cheap iron and steel imports had hurt local industry. The WTO-compliant Egyptian government-imposed tariffs. Egypt's ministry of industry and international trade imposed anti-dumping penalties on Chinese, Turkish, and Ukrainian iron and steel imports in 2017 (Global Trade Alert, 2017).

Domestic makers of these items were undercut by cheaper imported counterparts; therefore the levies levelled the playing

field. In 2022, the ministry eliminated the levies to boost competitiveness and international investment in the steel industry. Egypt's main commercial partner, China, was also appeased. Egypt's steel sector struggled in 2017. Anti-dumping tariffs protected domestic manufacturers against cheaper imports. China, Turkey, and Ukraine iron and steel products were subject to tariffs. Many circumstances drove the 2022 duty revocation. Iron and steel rivalry and foreign investment were the government's goals. Removing anti-dumping duties was not unanimous. Egyptian businesspeople criticized the decision, saying it would hurt local manufacturing (Global Trade Alert, 2017).

By adopting the anti-dumping legislation in 2017, billet and rebar imports have decreased but scrap imports have increased, allowing integrated and semi-integrated facilities to expand billet production for the local market. The Egyptian steel industry is facing challenges due to the fluctuations in the global steel market and increasing protectionist measures taken by major importing countries. The United States' decision to impose tariffs on steel imports led to retaliatory measures by the European Union, Turkey, and Canada. As a result, Egypt is likely to receive large quantities of low-priced steel imports due to its free market and lack of customs restrictions on such commodities. This could result in a glut of cheap steel goods in the country, while neighboring nations are also competing for markets to absorb their excess production (Global Trade Alert, 2017).

Threats to the Egyptian Steel Industry

The global steel market is experiencing a surplus of about 215 million tonnes, which is almost half of the volume of world trade in steel. Turkey, with a surplus production of 26 million

tons, is looking to drain it by exporting to markets such as the Middle East and North Africa, including Egypt, where there are no effective customs barriers, close distances, and low shipping costs. Despite the dumping duties on Turkish iron, exports to Egypt can still be resumed with a price margin below the target local selling prices. In addition, there is a threat from Iran's steel industry, the largest in the region, after the re-imposition of economic sanctions on Iran following the cancellation of the nuclear deal with the United States.

Safeguard on Iron Steel In 2019

For 180 days in 2019, Egypt placed 15 percent and 25 percent protections on iron billets and steel rebar (El-Fiqi, 2019). Egyptian business had a well-documented concern about imported steel hurting sales and output. The application included enough information to assess if the import spike hurt the local business. After consulting with stakeholders, including local industry, producers, and consumers, safeguard restrictions were imposed on imported iron and steel goods (El-Fiqi, 2019).

Egypt's imports rose sharply relative to its production. Imports rose significantly in the second half of 2018 compared to 2017 (World Trade Organization, 2019). Egypt's second-half steel production rose 31% from 2017. In 2018, the gap between imports and local production increased by 17% (World Trade Organization, 2019). Domestic steel stockpiled at an estimated 500,000 tons due to a $80 per tonne price differential between local and imported steel (World Trade Organization, 2019).

Stockpiling caused a sudden import spike that hurt indigenous firms. Sales and market share plummeted. El-Fiqi (2019) claims this will protect indigenous firms from unfair international competition and dumping and enhance iron and steel output.

This protection prevented domestic enterprises from ceasing production.

COVID -19

The WHO issued a public health emergency on January 30, 2020, because to the COVID-19 pandemic. COVID-19 has become a global pandemic in only a few months. On May 2, 2020, 343,422 infections and 243,831 deaths were recorded worldwide. Egypt had 6,193 cases and 415 fatalities. Millions of health care professionals have battled the extraordinary worldwide health danger of COVID-19. In the shadows, a serious danger to human livelihood is growing. Although the health hazard is most urgent, the globe must calmly and properly prepare for a somewhat different economic peril (World Health Organization, 2020)

COVID-19 is producing the worst economic disaster since the Great Depression. The epidemic and containment efforts would reduce production more than the global financial crisis, according to the IMF. They predict a 3% global economic decline in 2020 and 5.8% growth in 2021, although the effect on individual countries will depend on their economic structure and government response. Egyptian tourism, worker remittances, capital outflows, and domestic activity are projected to hurt the economy. The epidemic has hurt manufacturers, SMEs, and their workers, reducing output, employment, and commerce. Egypt's strong young population may help national recovery mobilisation. By early 2021, most crude steel factories have resumed production after the epidemic. After a strong start to 2021, steel consumption has slowed. Chinese steel output dropped 10% in Asia. Despite global steel price spikes and rising transportation costs,

worldwide steel trade improved in 2021(International Monetary Fund)

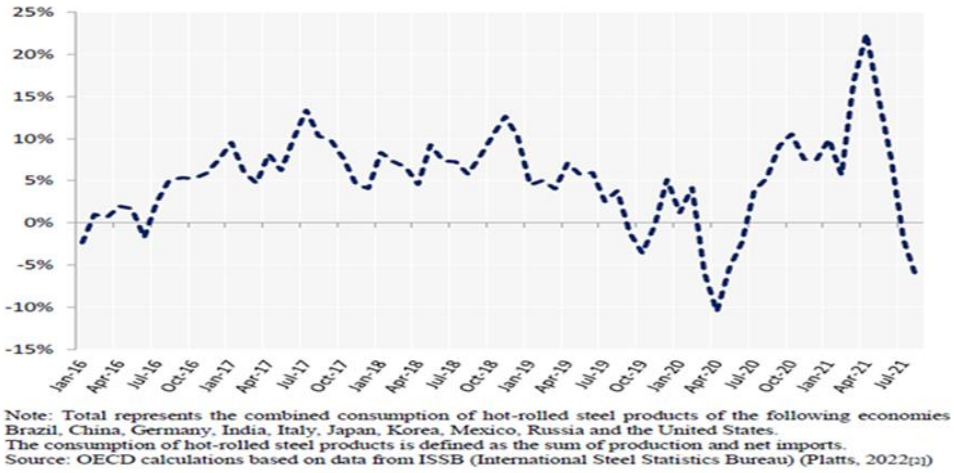

Figure 3: Line plot for the consumption of hot rolled steel products for OECD[1]

Global steel consumption rebounded significantly in the first half of 2021, but growth has since slowed, with differences in consumption patterns across regions. Central and South America saw a 23% increase while China experienced a 1% decrease due to slow real estate development. Overall, global steel consumption is expected to have grown by 4.5% in 2021. However, geopolitical conflicts and stricter monetary policies to combat inflation may lead to uncertainty in consumption patterns going forward. The growth in steel consumption in 2021 is a recovery from the dramatic decline caused by the COVID-19 epidemic in 2020 (OECD, 2022)

Table 3.Monthly production of steel Industry

	Level, thousand tonnes		% change, year-on-year		
	Dec 2021	2021	Dec 2021	Jul-Dec 2021 /Jul-Dec 2020	2021 / 2020
EU 27	11,113	152,510	-1.4	12.2	15.4
Other Europe	4,258	51,243	-0.8	5.8	11.6
CIS	8,928	105,598	-3.0	2.7	5.6
North America	9,701	117,835	7.5	17.2	16.6
South America	3,452	45,596	-8.7	10.0	17.9
Africa	1,229	15,965	-9.6	25.3	26.7
Middle East	3,942	41,196	22.1	-7.1	1.2
Asia, of which:	115,593	1,373,821	-4.4	-10.2	0.6
China (People's Republic of)	86,190	1,031,049	-6.8	-15.8	-3.2
Oceania	526	6,465	-1.3	4.5	6.4
World	158,743	1,910,228	-3.0	-5.3	3.7

Source: worldsteel data, as released on 25 January 2022.
Note: Data are based on monthly production data and can differ from annual data published after December of each year. Furthermore, monthly production data can be revised at any time.

Global steel consumption and production rebounded significantly in 2021, except for the Asian region where production slowed down in the second half of the year due to a decrease in China. The COVID-19 pandemic caused significant reductions in steel production in 2020 due to government restrictions and reduced demand. Some companies cut capacity temporarily in 2020, affecting the size of the rebound in steel production in 2021, which was most pronounced in the jurisdictions that experienced the largest drop in production in 2020. However, geopolitical conflicts and stricter monetary policies to combat inflationary pressures may cause uncertainty for steel consumption patterns going forward (World Steel).

COVID-19 in Egypt

Production

The production capacity of the local market reached almost 15.6 million tons, which represents 36% of available production capacities on the African continent and 26% of production capacities in Arab countries in 2018 .

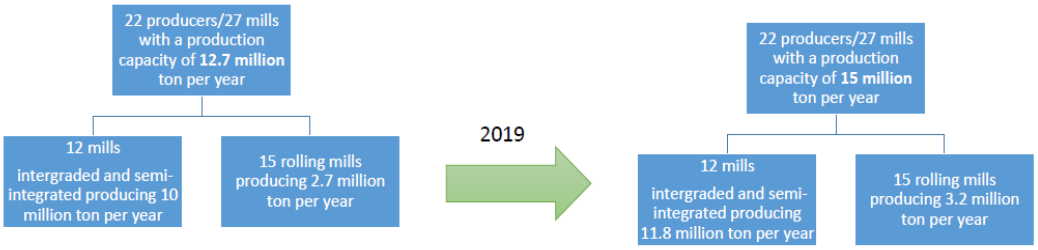

Figure 4. The steel production in Egypt year 2019

Steel production in Egypt averaged 403.63 thousand tonnes from 1991 until 2020, reaching an all-time high of 774.25 thousand tonnes in February of 2020 and a record low of 161 thousand tonnes in December of 1996. The below graph shows the slump in Egypt's steel production in 2019, which bounced back to recovery mode in the early months of 2020.

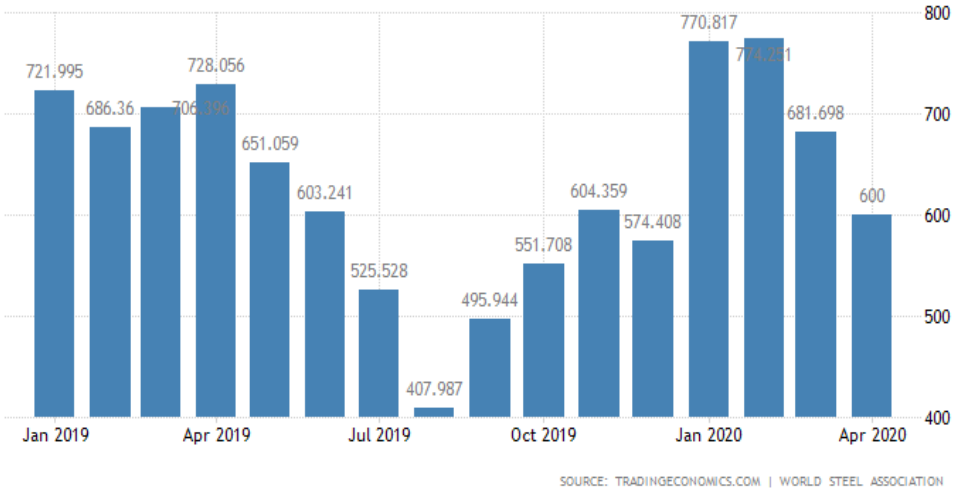

Figure 5. The bar chart for the slump in Egypt's steel production in 2019

Demand

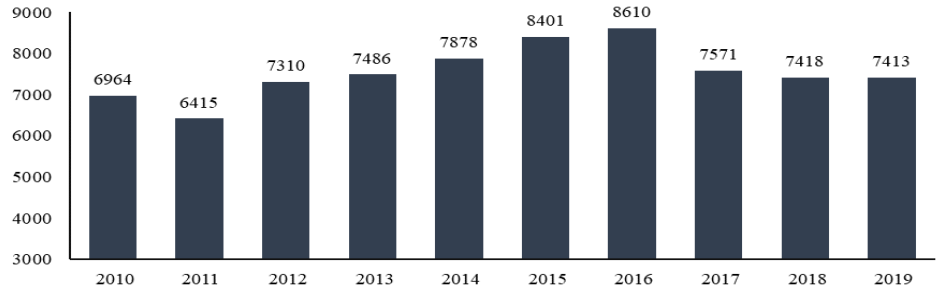

Figure 6. The bar chart for Egyptian rebars prices

Egyptian rebars cost EGP 9,500–10,400 per tonne. We expect a gradual rebound from the Current Pandemic global downturn, allowing local steelmakers to benefit from decreased natural gas, power, and scrap costs. In 2020, local selling prices dropped somewhat, while cost reductions increased business margins. Local rebar prices have fluctuated since late February. As rebar makes up 80% of this business in Egypt, we'd like to show the pricing of a tonne of rebar from October 2016 until now:

Table 4.Egyptian Companies Steel Industry ton prices

Company	2016/10/3	2017/12/13	2018/8	2020/2
EZZ	6275	11970	12528	10200
SUEZ for steel	6200	11950	12475	9900
Egyptian Steel	6000	11950	12525	9850
ELGARHY	-	11950	12450	9650
BESHAY	6275	11970	12525	9900

Fully integrated steelmakers and re-rollers will save EGP 400–600 and EGP 30–60, increasing profitability margins. COVID-19, depressed steel pricing, and stable iron ore prices make the market's near-term sales volume forecast tough. Nonetheless, various demand-side factors offer us hope for post-Coronavirus market consumption rates. The safeguard tariffs and utility repricing allow steelmakers to replace domestically imported goods with locally made ones and provide them a competitive advantage for exporting.

In December 2019, reports forecasted a 4% increase in Egyptian steel demand to 9.9 million metric tonnes in 2020, driven by new projects, private consumption growth, and the disposal of 2019 steel excess. With the acceleration of key projects like the New Administrative Capital and New Alamein cities, metro lines, and more, steel demand improved. To meet rising demand and manufacturing costs, Egyptian steel output will revive. . As the COVID-19 curfew has slowed building activity, demand curves will show the re-established domestic market forces.

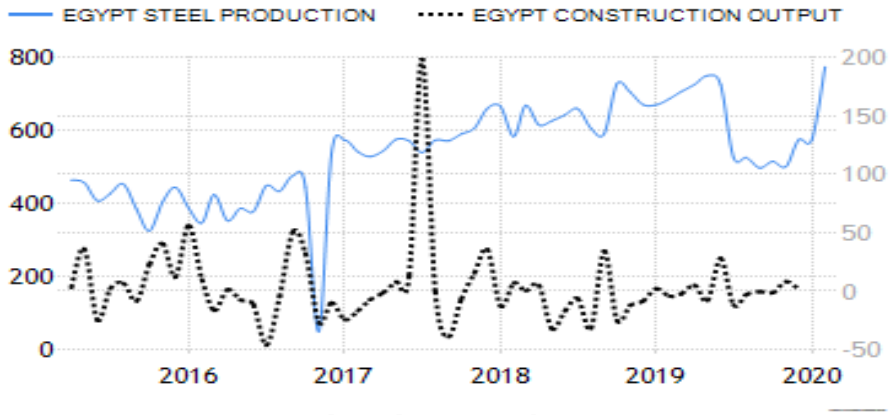

Figure 7.Egypt steel production and construction output

Table 5.Total Rebar sales in the Egyptian Market

Year	2015	2016	2017	2018	2019
Annual Sales (1000's tons)	7094.3	6904.3	7178.9	7207.1	7400

Table 6.Average Steel Rebar price (per ton) in the Egyptian market

Year	2015	2016	2017	2018	2019	2020
Average Steel Rebar price (per ton)	4824.4	6134.5	10539.5	12399.5	10775	8,864

Steel producers in Egypt are expected to benefit from cost savings, leading to increased profitability margins. The near-term outlook for the steel market remains challenging due to the impact of COVID-19 and weak steel prices. However, the demand for steel is expected to improve with the acceleration of major projects and the imposition of protectionist fees. The recovery in demand for steel will result in an increase in steel production in Egypt.

After the currency flotation in 2016, the value of EGP decreased by half, and inflation increased along with high interest rates, leading to a decline in individual consumption and weakening of purchasing power. Public spending helped maintain steel demand, but it's still dependent on the revival of individual demand. Despite challenges, the Egyptian steel market has advantages like low-cost manpower and potential for domestic demand. The government's fiscal response to COVID-19, including tax breaks and energy price cuts, gave some relief to the industry. Inflation has eased down and is expected to stabilize, while interest rates remain high but have decreased in the past 3 years.

The war in Ukraine & Russia

The war in Ukraine has caused a severe supply shock in the steel industry, leading to a surge in steel and raw material prices. Access to raw material supplies has become a key issue for many steel producers. Ukraine and Russia, despite their small global output share, are large exporters of key minerals and energy. The movements in commodity prices and financial markets since the conflict began could potentially reduce global GDP growth by over 1 percentage point in 2022 and increase global consumer price inflation index by as much as 2.8%. The impact will be felt differently across different regions.

Impacts are being felt through trade and slower economic growth

The crisis has led to trade disruptions in the steel industry due to the heavy reliance on Russian and Ukrainian exports of raw materials such as iron ore, pig iron, coking coal, coke, and scrap. Many countries, including Poland, Romania, Hungary, the Czech Republic, Turkey, Japan, Korea, Italy, the United States, Belgium, Bulgaria, the Netherlands, Germany, France, Romania, and Turkey, are heavily dependent on these exports. Finding alternative sources of these materials is crucial for the affected countries.

MKS Case Study

El-Marakby Steel has a long history in the steel industry, starting with trading and transitioning to industrial activity in 1960. Over the years, the company has transformed into an integrated steel production base, with a production capacity of over 300 KT per year in 2006/2007, and a new rolling mill with a production capacity of 400 KT per year in 2020. The company also has plans to build a lime calcination plant, an industrial gaseous unit, and steel fabrication and machining

workshops. El-Marakby supplies projects in Egypt and exports to various regions worldwide.

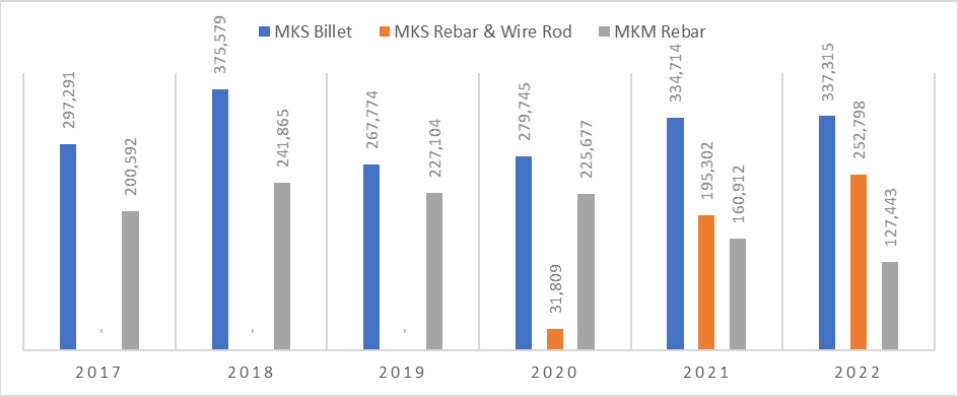

Figure 8.MKS & MKM Annual Production (Ton)

MKS Melt-Shop started producing billets in 2017, and in 2020, the second rolling line was initiated. However, due to the effects of COVID-19, MKM had to depend on imported billets again. El Marakby Steel Group was also affected by the pandemic, facing obstacles with foreign markets, extended delivery lead times, and shortages in container availability. Shipping and logistics processes globally were affected, causing delays in clearance procedures and supply schedules. The prolonged curfew in Egypt led to a scarcity of high-quality scrap, resulting in a price hike in HMS Scrap and a shrinkage in profit margins.

Findings

Confirmatory Factor Analysis

Table 7. Reliability and validity of variables based on Confirmatory factor analysis

	Cronbach's Alpha	Composite Reliability	AVE
Anti-dumping	**0.762**	**0.850**	**0.591**
Covid-19	**0.967**	**0.979**	**0.939**
Imports	**0.732**	**0.807**	**0.678**
Product capacity	**0.785**	**0.862**	**0.758**
Russia Ukraine war	**0.965**	**0.977**	**0.935**
Safeguard	**0.794**	**0.867**	**0.625**
exports	**0.779**	**0.869**	**0.689**

Source: Based on calculations using Smart PLS

CFA is used to monitor the validity and dependability of the factors discovered through the use of EFA. The Cronbach alpha was used to gauge the reliability. The Cronbach alpha for each variable was more than 0.7. As a result, each statement accurately captures the study's contributing aspects. Both the composite reliability and the average variance retrieved were computed in order to approximate the validity of the statements in describing the factors. Each component has an AVE above 0.5 and a CR above 0.7. This demonstrates how the assertions could be utilized to account for the factors.

Structural Equation Modelling

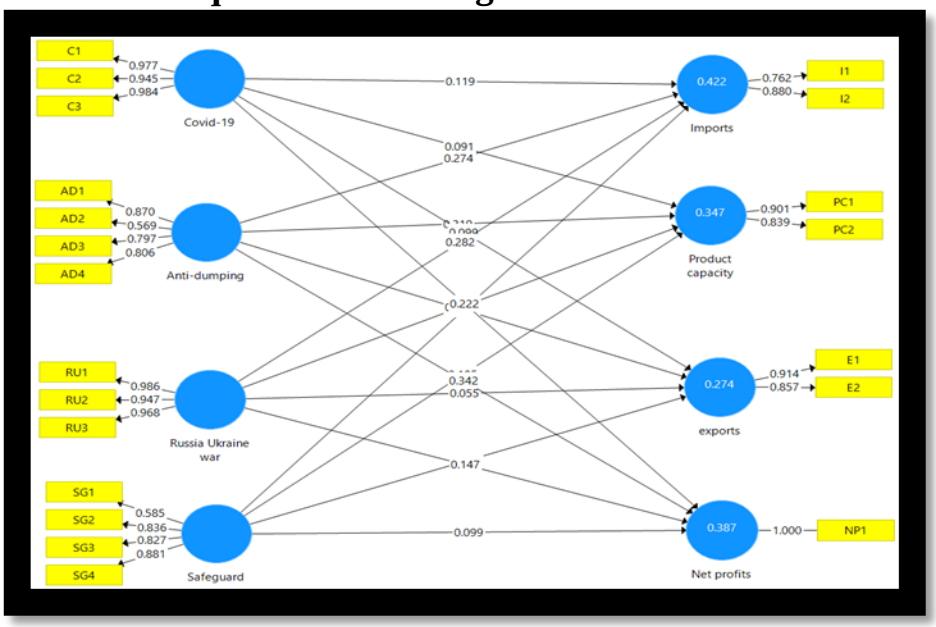

Figure 9. Structural equation model for the phenomenon

Table 8. Table: Coefficient estimates of SEM

	Original Sample	P Values	Accepted/Rejected
Anti-dumping -> Imports	0.274	**0.000**	Accepted
Anti-dumping -> Net profits	0.342	**0.000**	Accepted
Anti-dumping -> Product capacity	0.321	**0.000**	Accepted
Anti-dumping -> exports	0.334	**0.000**	Accepted
Covid-19 -> Imports	0.119	**0.029**	Accepted
Covid-19 -> Net profits	0.222	**0.001**	Accepted
Covid-19 -> Product capacity	0.092	**0.170**	Accepted
Covid-19 -> exports	0.171	**0.012**	Accepted
Russia Ukraine war -> Imports	0.281	**0.000**	Accepted
Russia Ukraine war -> Net profits	0.147	**0.023**	Accepted
Russia Ukraine war -> Product capacity	0.136	**0.009**	Accepted
Russia Ukraine war -> exports	0.106	**0.089**	Rejected
Safeguard -> Imports	0.171	**0.003**	Accepted
Safeguard -> Net profits	0.099	**0.127**	Accepted
Safeguard -> Product capacity	0.192	**0.008**	Accepted
Safeguard -> exports	0.190	**0.009**	Accepted

Source: Based on calculations using Smart PLS

The relationship structure in the structural equation model is depicted in the preceding figure. Every loading is more than 0.7, indicating that no statements should be excluded from the investigation. The impact of different factors on one another is investigated using structural equation modeling. It provides

insight into the phenomenon. The SEM can perfectly model data after applying CFA because all of its presumptions were met.

After applying SEM, the phenomenon was more understood. From the table above the results of the study indicate that Anti-dumping has a positive significant impact on Imports, Net profits, Product capacity and exports. While covid-19 has a positive significant impact on Imports, Net profits and exports but insignificant impact on product capacity. For Russia Ukraine war, it has a positive significant impact on Imports, Net profits and product capacity but it has insignificant impact on exports. At the end Safeguard has a positive significant impact on Imports, product capacity and exports but it has an insignificant impact on Net profits.

Correlation Analysis

Table 9. Kendall Tau coefficient of correlation

	Total Production	Total Imports	Total Exports	Net Profits
Anti-dumping	.804*	.594*	-.828*	-.412*
Covid-19 and safe guard	.943*	.644*	885*	.943*
Ukraine Wars	-.841*	-.763*	.918*	.300*

0.05>*,0.01>**

Anti-dumping was proven to have a significant positive relationship with both total production and total import. While it had a significant negative relationship with both total exports and net profits. On the other hand, The Russian Ukrainian war had a negative significant relationship with total production and total imports while having a positive significant relationship with total exports and net profits. The safe guard and covid-19 had a positive significant relationship with total production,

imports, exports and net profits. All these relationships are built on a 95% confident level.

Multiple Linear Regression Model

Table 10. Coefficients for a model of total production

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1747.330	1019.300		1.714	.105
	antidumping	85.395	1081.130	.022	3.25	.004
	safe and covid	61.532	1081.130	.016	4.57	.000
	Ukraine	-175.465	1485.872	-.032	-.3.65	.001
	R square	.257				

a. Dependent Variable: Total Production (Ton)

Around 25.7% of variation in total production based on model including the anti-dumping, safeguard, covid-19 and Ukraine war. The model was to be overall significant (p-value=0.00325<0.05). There is a positive significant impact of antidumping on total production. Applying antidumping increased the total production by 85.395. There is a negative significant impact of Ukraine wars and a positive significant impact of covid-19 on the total production .

Table 11. Multiple linear regression model for Coefficients of total exports

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1584.497	1081.850		1.465	.161
	Antidumping	-85.478	1147.475	-.020	-2.89	.009
	safe and covid	74.782	1147.475	.018	.065	.949
	Ukraine	201.715	1577.053	.034	.128	.900
	R square	.355				

a. Dependent Variable: Total Export

35.5% of variation in total exports are explained by model based on antidumping, covid-19, safeguard and Ukraine war. The model was to be overall significant (p-value=0.007<0.05). There is a negative significant impact of antidumping on total exports. Applying antidumping decreased the total exports by 85.478. There is an insignificant impact of Ukraine war on the total exports. This is consistent with the results that emerged from the Structural equation model describing the data collected through the survey. The safeguard and Covid had a significant impact on total exports at 90% confidence level. As covid 19 approached it increased the total exports by 74.782.

Table 12.MULTIPLE LINEAR REGRESSION MODEL FOR

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	175.111	22.698		7.715	.000
	Antidumping	15.167	24.074	.164	2.75	.012
	safe and covid	32.500	24.074	.352	3.64	.002
	Ukraine	-12.611	33.087	-.097	-.381	.708
	R square	.378				

a. Dependent Variable: Total Import

37.8% of variation in total imports are explained by model based on antidumping, covid-19, safeguard and Ukraine war. The model was found to be significant (p-value=0.00<0.05). There is a positive significant impact of antidumping on total imports. Applying antidumping increased the total imports by 15.167. There is an insignificant impact of Ukraine war on the total imports. The safeguard and Covid had a significant positive impact when applied on total imports. There was an increase by 32.5 in total imports since the start of their existence.

Table 13. MULTIPLE LINEAR REGRESSION MODEL FOR COEFFICIENTS OF NET profit

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	693.611	1162.822		.596	.559
	antidumping	1469.083	1233.359	.295	2.65	.015
	safe and covid	798.917	1233.359	.161	2.34	.030
	Ukraine	-2065.306	1695.090	-.294	-1.218	.240
	R square	.188				

a. Dependent Variable: Net Profit

18.8% of variation in net profit are explained by model based on antidumping, covid-19, safeguard and Ukraine war. The model was to be overall significant (p-value=0.043<0.05). There is a positive significant impact of antidumping on net profit. Applying antidumping increased the net profit by 1469.083. There is a positive significant impact of safe guard and covid on net profits. They showed a combined significant increase by 798.917 units in net profits since the year they started. The war in Ukraine on the other hand had an insignificant impact on the net profits. It is assumed because it just started a year ago, there is no enough evidence to prove its impact on profits.

Qualitative data analysis

This report presents an analysis and comparison of the views of executives from El-Marakby Group and Ezz Steel, two firms in the steel industry in Egypt, on the impact of deglobalization on the production of steel in the country. The responses were collected through qualitative interviews with executives from various positions within the firms. The report aims to highlight similarities and differences in the executives' perspectives on the subject, providing insight into the varying opinions and

experiences of the industry's executives on the impact of deglobalization on steel production in Egypt.

The impact of deglobalization on the production of steel in Egypt has been mixed. Representatives from El-Marakby Group pointed out that deglobalization led to an increase in the operations cost and prices of the final product, while also causing supply deficiencies in some markets, particularly the scrap market. On the other hand, representatives from Ezz Steel indicated that while deglobalization has reduced competition from abroad and allowed domestic producers to focus on the local market, it has also decreased the overall market size and created challenges for all producers, including those in Egypt.

Both firms agree that deglobalization has resulted in a reduction in cross-border commerce and increased trade barriers, making it more difficult for steel makers in Egypt to gain access to raw materials and sell their products outside of the country, leading to a decrease in total output levels and making it more difficult to compete on the international market. Overall, it can be concluded that deglobalization has had a negative impact on the production of steel in Egypt, though its impact has been mixed.

Concluding the Interviewee questions, representatives of both El-Marakby Group and Ezz Steel agree that the steel industry in Egypt has the potential to become a major player in the global market, given the country's strategic location, competitive labour costs, and government support for the industry. Both firms see opportunities in expanding into new markets, particularly in Africa, the Middle East, and Europe, and increasing exports of value-added steel products. The representatives also agree on the importance of investing in

technology and innovation to improve production processes, reduce costs, and increase efficiency. Finally, both firms acknowledge the need for the industry to adopt sustainable practices and reduce its carbon footprint in order to meet global standards and increase competitiveness.

At the end the steel industry in Egypt is committed to sustainability and reducing its environmental impact by implementing measures to optimize energy consumption and reduce emissions. This includes utilizing renewable energy sources, advanced technologies, and waste management systems. The steel industry also recognizes the importance of reducing its carbon footprint and has increased its use of scrap steel, implemented energy-efficient processes, and established partnerships to promote sustainable practices.

In terms of contributing to local communities, the steel industry provides employment opportunities, supports local businesses, and invests in infrastructure and education. These initiatives have helped to spur economic growth in the region and provide valuable support to the national economy. Both firms, El-Marakby Group and Ezz Steel, agree that the steel industry is essential for community development and have taken steps to support local communities.

Conclusion

In conclusion, the study has identified that anti-dumping, safeguard policies, COVID-19 pandemic, and the Russia-Ukraine conflict have significant impacts on the steel industry in Egypt. Anti-dumping and safeguard policies have positively impacted the industry by decreasing imports from countries dumping their products at low prices, while the COVID-19

pandemic affected both production and consumption levels by increasing the cost of raw materials. The Russia-Ukraine conflict increased the cost of energy in Europe, leading to an increase in transportation costs and import costs. However, it also provided an opportunity for Egypt to increase its exports of steel products. These factors have significant effects on the profitability of the steel industry in Egypt, with reduced demand for exports and increased competition from domestic producers. Companies in the steel industry need to focus on improving their competitiveness to adapt to these changes.

Recommendations

Many recommendations have been made as a result of the findings. This study provides a variety of managerial implications and calls for additional investigation.

Practical Recommendations

To improve the performance of the steel sector, practical recommendations have been provided for both organizations and governments. Organizations should monitor global economic trends and geopolitical developments, diversify export markets, increase product capacity, prepare for trade conflicts, be flexible and adjust to changing market conditions. Governments should continue to impose Anti-dumping & Safeguard measures, invest in recycling technologies, and amend building license ordinances. Additionally, Egypt should enhance collection of local raw materials, invest in de-carbonization, and cut costs through favorable transportation routes and lines, consolidation of imports, and use of government programs like Authorized Economic Operator. By following these recommendations, organizations and

governments can better navigate the challenges of the steel sector.

Academic Recommendations

The following are recommendations for future studies based on the case study. Firstly, the research on the impact of deglobalization on the steel industry should be repeated on wider scales of companies to focus on the effect of relationships. Secondly, future studies should investigate the ways in which inclusion and diversity foster innovation and the circumstances in which these impacts are most noticeable.

Lastly, future studies should look into the ethical and societal repercussions of relying on data-driven decision-making and how businesses might successfully integrate data analytics into their decision-making processes. These recommendations can help researchers and organizations better understand and address the challenges faced by the steel industry and other industries.

Acknowledgement

I thank Allah guidance to enroll in a DBA programme. Dr. Khaled Sakty, who inspired, supported, and oversaw this study, deserves appreciation. His experience, skill, and criticism enhanced my learning. My family submitted my DBA thesis. My mother, two brothers, and sister provided unwavering support. El-Marakby Steel Company employees offered emotional support, site inspections, and data collection. I surveyed El-Marakby Steel executives.

Reference

Dür, A., Eckhardt, J., & Poletti, A. (2019). **Global value chains, the anti-globalization backlash, and EU trade policy**: a research agenda. Journal of European Public Policy, 1-13.

El-Fiqi, M. (2019, April 26). **Egypt's new import tariffs cause steel market confusion - economy - business**. Ahram Online. Retrieved January 18, 2023, from https://english.ahram.org.eg/NewsContentP/3/330686/Business/Egypts-new-import-tariffs-cause-steel-market-confu.aspx

Global Trade Alert. (2017). Global trade alert. Intervention 56292: Egypt: Definitive antidumping duty on imports of certain bars and rods of iron alloy or non-alloy steel rebar from China, Ukraine and Turkey. Retrieved January 18, 2023, from https://www.globaltradealert.org/intervention/56292/anti-dumping/egypt-provisional-antidumping-duty-on-imports-of-certain-bars-and-rods-of-iron-alloy-or-non-alloy-steel-rebar-from-china-ukraine-and-turkey

Holm, H. H. (2019). **Whose world orders? Uneven globalization and the end of the cold war**. Routledge New York.
https://www.tandfonline.com/doi/abs/10.1080/25726641.2018.1539538

Khoo, H. H., Clifton, C., Butterworth, J., MacRae, G., & Ferguson, G. (2012**). Influence of steel shim hardness on the Sliding Hinge Joint performance**. Journal of Constructional Steel Research, 72, 119-129. https://www.academia.edu/download/43855347/Influence_of_steel_shim_hardness_on_the_20160318-32673-1uanlfg.pdf

King, S. D. (2018). **Grave new world: The end of globalization, the return of history**. Yale University Press.

Lee, K., & Ki, J. H. (2017). **Rise of latecomers and catch-up cycles in the world steel industry**. Research Policy, 46(2), 365-375.

Livesey, F. (2018). **Unpacking the possibilities of deglobalization**. Cambridge Journal of Regions, Economy and Society, 11(1), 177-187.

Martin, M. (2018). **Keeping it real: Debunking the deglobalization Myth, Brexit and Trump: "lessons" on integration**. Journal of International Trade Law and Policy, 17(1/2), 62-68.

Metal expert. (n.d.). Retrieved March 3, 2023, fhttps://metalexpert.com/en/news/htmlinetnewsbus?head=Egyptian-steel-mills-try-to-adapt-to-curfew&unid=A0124DD8E81B0BE4C225853B00534EDAQ

Metal expert. (n.d.). Retrieved March 3, 2023, from https://metalexpert.com/en/index.html

Mohamed Salman Abdou, D., Tarek, H., & Tarek, K. (2018). **Market analysis to the Steel industry**: evidence from Egypt. http://repository.msa.edu.eg/xmlui/bitstream/handle/123456789/3303/494-1157-1-PB.pdf?sequence=4

Mohammed, A. R., Mohamed, M. O., Alhubaishy, Y. A., Nasser, K. A., & Fahim, I. S. (2020). **Ergonomic analysis of a working posture in steel industry in Egypt using digital**

human modeling. SN Applied Sciences, 2, 1-8. https://link.springer.com/article/10.1007/s42452-020-03872-y

Nikiforova, V. A. (2018). **World steel industry: current challenges and development trends (analytical overview**). Economy of Industry, (1 (81)), 86-114.

Prashantham, S., Eranova, M., & Couper, C. (2018). **Globalization, entrepreneurship and paradox thinking**. Asia Pacific Journal of Management, 35(1), 1-9.

Renzulli, P. A., Notarnicola, B., Tassielli, G., Arcese, G., & Di Capua, R. (2016). **Life cycle assessment of steel produced in an Italian integrated steel mill. Sustainability**, 8(8), 719.

Reznikova, N., & Ivashchenko, O. (2018). **Projections of deglobalization in the contemporary**

Wordsteel Association. (2019, January 25). **Global crude steel output increases by 4.6% in 2018**. Retrieved

World Health organization (2020). Retrieved December 2022, from https://www.who.int/countries/egy/

World Steel Association. (2017, April 20). **Global steel industry: outlook, challenges, and opportunities** .

World Trade Organization. (2019). **Documents online home page**. Retrieved January 18, 2023, from https://docs.wto.org/dol2fe/

World Trade Organization. (2019). **G/SG/n/6/EGY/14.** Retrieved January 18, 2023, from https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=252853%2C252850%2C252494%2C252493%2C252283%2C252090%2C252091%2C252098%2C251968%2C251927&CurrentCatalogueIdIndex=0&FullTextHash=&HasEnglishRecord=True&HasFrenchRecord=False&HasSpanishRecord=False

World Trade Organization. (2019). **WTO Understanding the WTO - Anti-dumping, subsidies, safeguards: contingencies, etc.** Wto.org .

Yearbook, S. S. (2014). **World steel association. Worldsteel Committee on Economic Studies**—Brüssels. Belgium.
https://www.ezzsteel.com/
https://www.elmarakbysteel.com/
https://www.beshaysteel.com
https://www.solbmisr.com
https://metalexpert.com/en/index.html
https://www.steelorbis.com/steel-prices/
http://www.mti.gov.eg/Arabic/Pages/default.aspx
https://www.commerce.gov/issues/trade-enforcement/section-232-steel

Appendix

APPENDIX A:

Survey Questionnaire

The University of Arab Academy is conducting a study to determine the impact of deglobalization on steel trade and steel producers' profitability in Egypt. The study will use a Google

Form questionnaire sent to college students, and the information collected will be classified and not shared. The purpose of the study is educational, and the questionnaire will take between 5 and 8 minutes to complete.

I. Demographic Data

1.Gender :

a.Male

b.Female

2.Age:

a.<20

b.30-20

c.40-30

d.50-40

e.>50

3.Educational level completed

a.Bachelor degree or equivalent

b.Post graduate studies

4.Employment

a.Unemployed

b.Public organization

c.Private organization

d.Self-employed

e.Other, Please specify

II. Survey Questions

Variable	Statements	5	4	3	2	1
De-globalization	Ant-dumping measures has impacted the steel industry in Egypt?					
	Safeguard measures has impacted the steel trade in Egypt?					
	COVID-19 pandemic has impacted the steel trade in Egypt?					

	Russia-Ukraine conflict has impacted the steel industry in Egypt?					
	The trade protectionism has affected the steel industry in Egypt?					
	The deglobalization of the steel industry has impacted the transportation sector in Egypt?					
Steel Industry	The steel industry has been affected by deglobalization in recent years					
	The transportation sector has been impacted by deglobalization in recent years?					
	The deglobalization of the steel industry has impacted employment opportunities in the steel industry in Egypt?					
	The deglobalization has affected the steel production in Egypt?					
	The deglobalization of the steel industry has impacted the profitability of steel producers in Egypt?					

IV. Thank you for sharing your thoughts with us .

APPENDIX B

SAMPLE INTERVIEW QUESTIONS

The semi-structured interview aims to explore the impact of deglobalization, policies such as safeguard and antidumping, the COVID-19 pandemic, and the conflict between Russia and Ukraine on the steel industry in Egypt. It will also discuss the current challenges, adaptation measures, sustainability, technology, innovation, government support, and the industry's contribution to the development of local communities .

Qualitative approach: (Interview Questions)

1- Can you explain the impact of deglobalization on the production of steel in Egypt?
2- How has the safeguard policy affected the steel industry in Egypt?
3- How has the antidumping policy impacted the steel industry in Egypt?
4- Can you discuss the impact of COVID-19 on the steel industry in Egypt?
5- How has the conflict between Russia and Ukraine affected the steel industry in Egypt?
6- Can you describe the effect of deglobalization on the export of steel in Egypt?
7- How has deglobalization impacted the import of steel in Egypt?
8- Can you explain the effect of deglobalization on the profitability of the steel industry in Egypt?
9- Can you discuss the current challenges faced by the steel industry in Egypt?
10- How has the steel industry in Egypt adapted to the changes brought by deglobalization?
11- How has the government of Egypt supported the steel industry?
12- Can you describe the role of technology in the steel industry in Egypt?
13- How has the steel industry in Egypt contributed to the economy?
14- Can you discuss the future outlook for the steel industry in Egypt?
15- How does the steel industry in Egypt compare to other countries in terms of production, export, and import?

16- Can you discuss the impact of deglobalization on the employment in the steel industry in Egypt?
17- How has the steel industry in Egypt overcome obstacles and challenges?
18- Can you describe the role of innovation in the steel industry in Egypt?
19- Can you discuss the measures taken by the steel industry in Egypt to improve sustainability and reduce its carbon footprint?
20- How has the steel industry in Egypt contributed to the development of the local communities?