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"Can Mongolian traders benefit from order consolidation with Chinese wholesalers? Case EU and Mongolia"

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Statutory Declaration

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I hereby affirm in lieu of an oath that I provided the submitted bachelor thesis

“Can Mongolian traders benefit from order consolidation with Chinese wholesalers? Case EU and Mongolia”

I did not use any sources other than those stated. In case that the work is additionally submitted on a data medium, I declare that the written and the electronic form are completely identical. The work was not submitted in the same or similar form to any examination authority.

Ulaanbaatar/Nalaikh, 5/16/2023	Enerelt
Place, Date	Signature

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Abstract

This thesis focuses on examining the practicality of order consolidation for Mongolian traders who import goods from Germany. The analysis explores various aspects such as transportation routes, costs, wholesale and retail prices, and the potential benefits and challenges associated with order consolidation.

The literature review section investigates the current trade trends between the EU and Mongolia, including the main transportation routes. It also delves into the concept of order consolidation, discussing its advantages and challenges. The methodology and study area section outline the research design, data sources, and collection procedures. The analysis and findings section presents the collected data and analyzes trade volumes, selected EU export goods, time and cost considerations for different transportation routes, and wholesale and retail prices. The findings highlight that importing through China presents potential cost and time savings compared to other routes. Moreover, the analysis suggests that Mongolian traders can benefit from consolidating their orders with Chinese wholesalers, leading to reduced transportation costs and more favorable wholesale prices. However, the study also acknowledges the challenges involved, such as effective communication and coordination with Chinese wholesalers. Based on these findings, the study recommends that use more efficient trade route and Mongolian traders can benefit from order consolidation with a Chinese wholesaler as it leads to economies of scale and lower prices per unit. By combining their orders with other Mongolian traders, they can negotiate better deals with the wholesaler and reduce shipping costs, which would increase their profit margins. Additionally, the

consolidation of orders makes it easier to manage the logistics of transportation and reduces the administrative burden of handling multiple shipments. Order consolidation can also have drawbacks, such as increased lead times and inventory holding costs, and it may not always be the best option for all types of goods and businesses.

In conclusion, this thesis provides valuable insights into the feasibility of order consolidation for Mongolian traders importing goods from Germany and use selected route. It emphasizes the potential benefits of consolidating orders with Chinese wholesalers while acknowledging the associated challenges. The study offers recommendations for traders considering implementing an order consolidation strategy. By considering these findings

1. INTRODUCTION

1.1. Background and objective of the study

In today's increasingly interconnected world, international trade has become a critical driver of economic growth and development. The ever-growing integration of markets, facilitated by advancements in technology, communication, and transportation, has led to the rapid expansion of global value chains. These developments have created new opportunities for businesses to optimize their supply chains, reduce costs, and maximize their competitive advantages. One such opportunity is the consolidation of orders, which involves combining smaller orders into a single, larger shipment. This approach reduces transportation costs and increases efficiency by optimizing cargo space, minimizing the number of shipments, and streamlining the supply chain management process.

The main purpose of this study is to investigate the feasibility of realistic solutions to minimizing trade costs via order consolidation and to provide recommendations for EU-based traders, such as those from Germany to Mongolia. The study aims to compare the two main transportation corridors between Germany and Mongolia based on their overall time, cost, and distance. Mongolian traders import various goods from Germany, including machinery, vehicles, pharmaceuticals, and processed food products. However, due to the geographical distance between the two countries, the lack of direct transportation routes, and limited transport infrastructure, the cost of importing goods from Germany can be high for Mongolian

traders. High transportation costs, coupled with lengthy transit times and complex customs clearance procedures, can be a problem. The research is expected to aid traders and enterprises in making better-informed decisions regarding supply chain and logistics planning, pricing tactics, increasing profitability, and expanding their market reach.

This study suggested that the volume of Chinese imports from the European Union (EU) is advantageous in terms of cost, as EU suppliers are able to offer highly discounted prices to buyers who have long-term contracts for the purchase of large volumes of goods. Furthermore, it is suggested that the transportation of goods via block train is consistently more cost-effective than the shipment of goods via single or fewer containers. The study reveals a unique opportunity for Mongolian traders to benefit from order consolidation with Chinese wholesalers. China's well-developed logistics infrastructure, large market, and strategic location within Asia make it an ideal hub for transit trade. Moreover, China has been actively investing in the development of new transportation corridors, such as the Belt and Road Initiative (BRI), which aims to improve connectivity between Asia, Europe, and Africa, further enhancing its role as a global logistics hub. Since consolidating their orders with Chinese wholesalers, Mongolian traders can potentially reduce their transportation and logistics costs, gain access to the vast Chinese market, and create new business opportunities. Order consolidation can lead to economies of scale, as larger shipment volumes often result in lower per-unit transportation costs. Additionally, by leveraging China's well-developed logistics infrastructure and its strategic location as a transit hub, Mongolian traders can benefit from shorter transit times and more reliable transportation services.

The primary objective of this study is to investigate whether Mongolian traders importing goods from Germany can benefit from order consolidation with Chinese wholesalers. To achieve this objective, the study will examine the historical context and recent developments in trade between the EU and Mongolia, as well as between the EU and China. It will also analyze the main trade routes used for shipping goods between Germany and Mongolia, the time and cost implications associated with these routes, and the potential benefits and challenges of order consolidation with Chinese wholesalers.

1.2. Research Questions

The research questions guiding this study are:

1. What are the trends in trade between the EU and Mongolia, and between the EU and China?
2. What are the primary trade routes for the transportation of commodities between Germany and Mongolia?
3. What are the differences between the two routes in terms of time-cost-distance?
4. What are the potential advantages for Mongolian traders in terms of order consolidation?

1.3. Significance of the study

This study holds significance for multiple stakeholders, including Mongolian traders, Chinese wholesalers, and policymakers involved in international trade between Germany, Mongolia, and China. By exploring the potential benefits and challenges of order consolidation, the study aims to provide insights that can help Mongolian traders make informed decisions about their trade strategies. Additionally, the research findings may contribute to a deeper understanding of the dynamics in the trade relations between these three countries and inform policy development to further enhance trading opportunities.

1.4. Limitations of the study

This study is subject to certain limitations

1. Limited data availability: The analysis in this thesis is constrained by the accessibility and quality of data on trade routes, transportation costs, and product prices. This limitation could potentially impact the accuracy and generalizability of the findings.

2. Focus on specific product categories: The analysis in this thesis is primarily based on a select set of product categories, which may not be representative of the broader range of goods imported from Germany to Mongolia. Consequently, the conclusions may not be applicable to all product types
3. Exclusion of alternative routes and transportation modes: The thesis primarily compares two main trade routes between Germany and Mongolia, excluding other possible routes or transportation modes that might offer different cost or time advantages. This limitation could potentially overlook alternative strategies that could be more advantageous for Mongolian traders.
4. Ignoring the Impact of Seasonal Factors: The thesis does not consider the potential effects of seasonal variations on transportation costs and time. Factors such as weather conditions, seasonal demand fluctuations, and seasonal maintenance activities on infrastructure can significantly impact both the cost and time of transport.
5. Lack of Primary Data: The research relies heavily on secondary data, and there is a lack of primary data from actual traders, which could provide valuable insights into practical challenges and benefits not apparent in the available data.

1.5. Organization of the study

The study is organized into the following sections:

Section 1: Presents the background and objective of the study and lists the research questions

Section 2: Presents a literature review on international trade between the EU and Mongolia, time and cost analysis, and highlights on order consolidation.

Section 3: Discusses the methodology and study area, covering the study area, data sources and collection procedures, research design, and data analysis.

Section 4: Introduces the concept of order consolidation, providing an analysis of trade between the EU and Mongolia, selected EU export goods, time and cost analysis of selected routes, and price comparisons.

Section 5: Presents the conclusions and recommendations.

2. LITERATURE REVIEW

2.1. International trade between EU and Mongolia

2.1.1. Trends in trade between the EU and Mongolia

The literature on trade between the EU and Mongolia highlights that the relationship has experienced growth in recent years, with the EU becoming one of Mongolia's top trading partners. Some studies focus on the primary goods exported from the EU to Mongolia, including machinery, vehicles, and chemical products (European Commission, 2021). In addition, research on the impact of the EU-Mongolia Partnership and Cooperation Agreement (PCA) on trade suggests that the agreement has fostered closer economic ties and increased trade opportunities.

According to Eurostat, the statistical office of the European Union, the total trade in goods between the EU and Mongolia amounted to $673.3 million in 2021. This represented an increase of 24% compared to the previous year. The main EU exports to Mongolia in 2021 were machinery and transport equipment, which accounted for 29.7 % of total EU exports to the country. The main import products from Mongolia to the EU were textiles and clothing, which accounted for 63.6% of total EU imports from the country. In terms of the volume of trade, the total trade volume between the EU and Mongolia increased from $441 million in 2016 to $673.3 million in 2021, representing a growth rate of 53% over the period.

2.1.2. Trends in trade between the EU and China

Trade relations between the EU and China have rapidly expanded, with China now being the EU's second-largest trading partner behind the United States. Literature on EU-China trade emphasizes the growing importance of this relationship for the global economy, particularly in areas such as manufacturing, technology, and services .The trade balance between the EU and China has shifted over the years, with China now enjoying a trade surplus due to its competitive exports (European Commission, 2021).

In 2022, China was the third largest partner for EU exports of goods (9.0 %) and the largest partner for EU imports of goods (20.8 %). Among EU Member States, the Netherlands was the largest importer of goods from China and Germany was the largest exporter of goods to China in 2022. According to lates data, the total trade in goods between the EU and China amounted to $856 bilion in 2022. This represented an increase of 19% compared to the previous year. The main EU exports to China in 2022 were machinery and transport equipment, which accounted for 50 % of total EU exports to the country. The main import products from China to the EU were textiles and clothing and machinery and electrical equipment which accounted for 56.3% of total EU imports from the country. In terms of the volume of trade, the total trade volume between the EU and China increased from $452 million in 2016 to $856 million in 2022, representing a growth rate of 94% over the period.

2.1.3. Main routes

Various studies have investigated the primary trade routes used to transport goods between Germany, Mongolia, and China, focusing on both rail and road options. These studies explore the advantages and challenges of different routes, including the Trans-Siberian Railway, the New Eurasian Land Bridge, and the China-Mongolia-Russia Economic Corridor (ECNS, 2017). Comparisons of these routes often center on factors such as transportation time, cost, and reliability. The selected routes are:

1.Germany-Russia-Mongolia.

2.Germany-China-Mongolia.

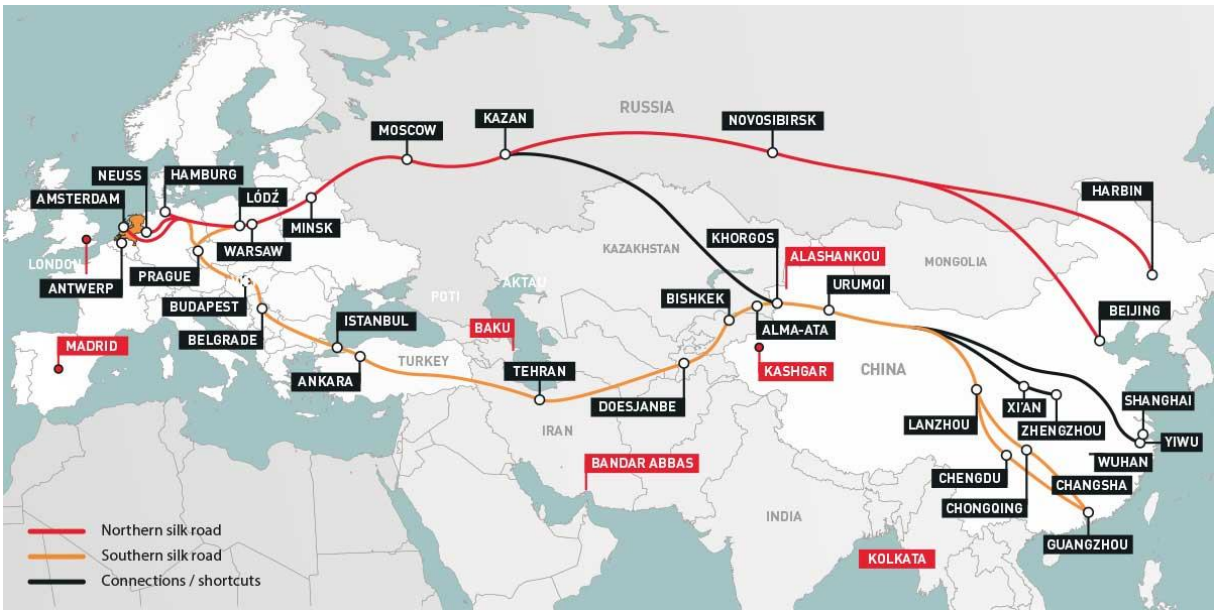

Figure 1 Routes between Germany and Mongolia

Trade between Germany and Mongolia encompasses two primary routes: one that traverses through China and another that courses through Russia. Each of these routes has unique advantages and challenges, with their relevance often determined by the nature of the goods being transported, cost considerations, time factors, and reliability of the routes.

The first route, which goes through China, is part of the ambitious New Eurasian Land Bridge. This connection is sometimes referred to as the "Second Trans-Siberian," linking Western Europe with East Asia. It provides a direct railway link from Duisburg, Germany to Ulaanbaatar, Mongolia via Alashankou, China. This route offers several advantages, including a developed transportation infrastructure, access to Chinese markets, and a relatively shorter transit time compared to maritime routes. However, it faces challenges such as the need for transshipment due to different railway gauges between countries and potential delays at border crossings. Moreover, despite the relatively lower transportation cost, the route often involves higher product prices, owing to the higher wholesale prices of goods in China compared to other countries.

On the other hand, the route through Russia primarily uses the renowned Trans-Siberian Railway, connecting Germany and Mongolia via Brest, Belarus, and other Russian cities. Often referred to as the "Mongol Vector", this route has a significant historical and economic importance, having served as a vital link between Europe and Asia for over a century. The

route offers a consistent and reliable service, with block trains ensuring a secure and uninterrupted journey for the goods. While the total transit time can be longer than the China route, the tariff per Twenty-foot Equivalent Unit (TEU) is typically lower. However, this route also faces challenges such as potential geopolitical risks, longer transit times, and the need for transshipment due to gauge differences.

In summary, both the China and Russia routes play a crucial role in facilitating trade between Germany and Mongolia. The choice between these routes depends on various factors including the nature of goods, cost sensitivity, time constraints, and risk tolerance. While the China route provides access to a larger market and offers a shorter transit time, the Russia route offers lower tariffs and a more consistent service. As global trade continues to evolve, understanding the dynamics of these routes will remain critical for businesses and policymakers alike.

2.1.3.1 Germany - Russia – Mongolia

Importing goods from Germany through Russia to Mongolia is a possible option for Mongolian traders. However, it may not be the most efficient route due to longer transit times and higher transportation costs compared to other routes. The distance from Germany to Mongolia via Russia is around 10,000 kilometers, and transportation usually involves using the Trans-Siberian railway or road transportation. The transportation time can vary depending on factors such as the type of transport used and the customs clearance process, but it can take between two to three weeks. Trans-Siberian Railway Corridor I[1]. It has been actively used, for example:
- Rail – Rail: Germany -Breast – Ulaanbaatar through Trans-Siberian corridor I. There are block train services so-called “Mongol Vector[2]” between Brest – Ulaanbaatar. It runs on 10^{th} , 20^{th} and 30^{th} of each month. The transportation cost for importing goods from Germany to Mongolia through Russia can also be higher due to the longer distance and the need to pay for additional customs clearance fees, handling charges, and other fees associated with

[1] passes through the territory of Poland, Latvia, Lithuania, Estonia, Belarus, Russia, Kazakhstan, Uzbekistan, China, Mongolia and DPRK.

[2] Mongolian vector [Internet]. [cited 2023 May 10]. Available from: https://www.rw.by

crossing multiple borders. importing goods from Germany to Mongolia through Russia may seem like a direct route, the potential risks and challenges associated with this route can make it a less desirable choice. Other transportation options, such as importing through China, may be a more viable and cost-effective option for Mongolian traders.

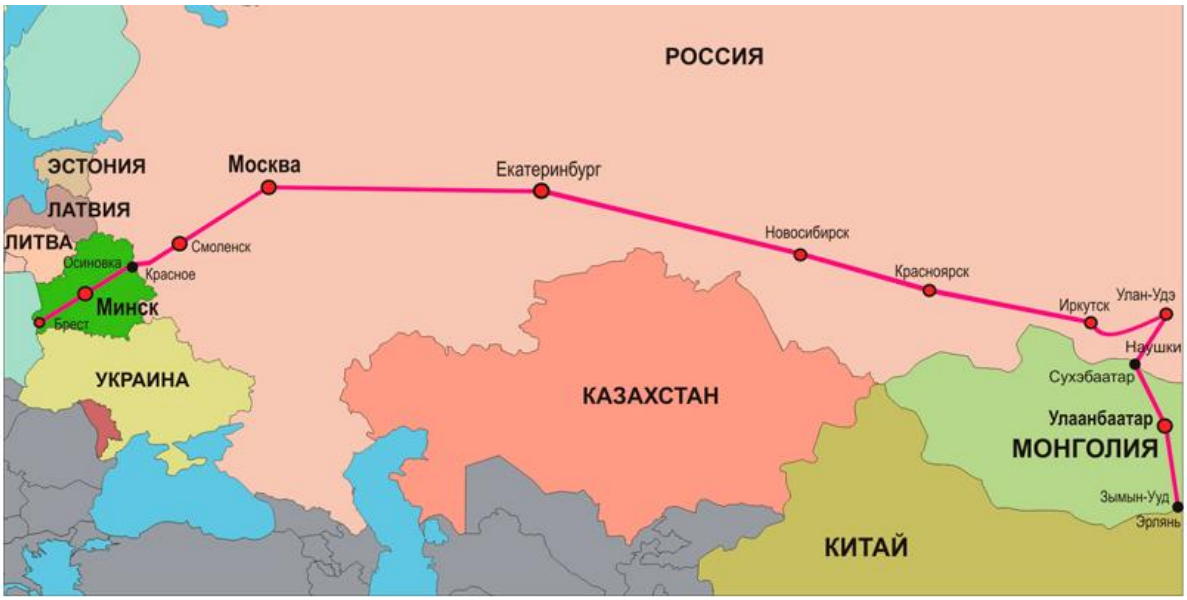

Figure 2 Mongolian Vector train at the Belarusian Railway *source:www.rw.by*

2.1.2.2 Germany to China

Importing goods from Germany to China is a popular route for international trade, and it may offer Mongolian traders a more cost-effective option for importing goods compared to other routes. The transportation route from Germany to China can vary depending on the specific location of the supplier and the final destination in China. However, there are several common transportation modes that can be used, including sea freight, air freight, and rail transportation. Rail transportation is also an option for importing goods from Germany to China. The journey takes around 12-16 days and involves shipping the goods by train. Rail transportation can be more cost-effective than air freight, and faster than sea freight, making it an attractive option for some types of goods. Importing goods from Germany to China by road is also possible, but it is not the most common transportation mode due to the long distance and challenges associated with crossing multiple borders. The road transportation route from Germany to

China involves shipping the goods by truck, crossing multiple borders, and navigating through different customs procedures. The journey can take up to several weeks, depending on the route and the customs clearance process. One of the main challenges of importing goods from Germany to China by road is the need to navigate through multiple border checkpoints, which can be time-consuming and costly. In addition, the road infrastructure and conditions may not be optimal in some parts of the route, which can lead to delays and additional costs.

Figure 3 The main China-Europe freight train route through Central Asia. *Source: Chen and Mardeusz (2015, 6-7)*

2.1.2.3 China to Mongolia

The transportation route from China to Mongolia can vary depending on the specific location of the supplier and the final destination in Mongolia. However, there are several common transportation modes that can be used, including road transportation, rail transportation, and air freight.

Road transportation is a popular transportation mode for importing goods from China to Mongolia, especially for small and medium-sized shipments. The journey takes around 2-5 days, depending on the specific location of the supplier and the final destination in Mongolia.

Road transportation is cost-effective, especially for short distances, but it may not be suitable for all types of goods. Rail transportation is another transportation mode that can be used for importing goods from China to Mongolia. The journey takes around 5-10 days, depending on the specific location of the supplier and the final destination in Mongolia. Rail transportation is cost-effective and can handle larger shipments, making it an attractive option for some types of goods.

Air freight is also an option for importing goods from China to Mongolia. The journey takes around 2-3 days, but it is more expensive compared to other transportation modes. Air freight is usually used for urgent and high-value shipments that require faster delivery times.

Overall, importing goods from China to Mongolia offers Mongolian traders several transportation options to choose from. The specific transportation mode chosen should depend on the needs and requirements of the trader and the goods being imported.

2.2. Time-Cost-Distance model

2.2.1. Time and cost analysis recommended by UNESCAP

The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) has provided guidelines for conducting time and cost analysis for international trade. These guidelines emphasize the importance of considering factors such as transportation time, customs clearance, transit time, and other logistics-related elements (UNESCAP, 2013). By following these guidelines, traders and policymakers can identify bottlenecks and inefficiencies in the supply chain and develop strategies to optimize trade routes.

2.2.2. Features of selected routes

The features of selected trade routes between Germany, Mongolia, and China play a critical role in determining the time and cost efficiency of transporting goods. Factors such as distance, infrastructure quality, customs procedures, and border control policies can significantly impact the overall time and cost of shipping goods (UNESCAP, 2013). Analyzing these features can help Mongolian traders identify the most cost-effective and time-efficient routes for their imports from Germany and potential consolidation with Chinese wholesalers.

Figure 5 Possible routes of Europe to China *source: railwaygazette.com*

Figure 4 Possible routes of China to Germany *source: railwaygazette.com*

2.2.3. Wholesale and Retail prices

Understanding the price differences between wholesale and retail is crucial for traders seeking to maximize profit margins. Studies on pricing structures in international trade have explored various factors that influence wholesale and retail prices, such as transportation costs, taxes, tariffs, and mark-ups by intermediaries (Reardon & Timmer, 2007). An examination of these factors in the context of Mongolian traders importing goods from Germany can provide insights into the potential benefits of consolidating orders with Chinese wholesalers.

Literature on international trade highlights the benefits of sourcing products directly from distributors in China, such as cost savings, access to a diverse range of goods, and potentially reduced lead times. For Mongolian traders importing goods from Germany, buying from Chinese distributors could offer an alternative source of products, possibly at a lower cost or with faster delivery times. However, potential challenges include navigating complex distribution networks, ensuring product quality, and managing relationships with Chinese suppliers.

2.2.4. Using China as a main hub for transit trade

China's strategic location, well-developed infrastructure, and extensive global trade connections make it an attractive hub for transit trade Research suggests that using China as a transit hub can offer several advantages, such as improved access to global markets, more efficient logistics, and the opportunity to take advantage of China's existing trade networks For Mongolian traders, importing goods from Germany through China could provide a more streamlined and cost-effective way to bring products to market. However, potential challenges may include increased complexity in supply chains, customs procedures, and regulatory compliance.

2.2.5. Consolidating order with Chinese wholesalers

Order consolidation refers to the practice of combining multiple smaller orders into a single, larger shipment. By consolidating orders, traders can achieve cost savings through economies of scale, reduced transportation costs, and improved logistics efficiency (Boone et al., 2007). For Mongolian traders importing goods from Germany, consolidating orders with Chinese wholesalers could potentially offer several benefits, including cost savings, enhanced distribution networks, and increased product variety. Research also suggests that successful order consolidation requires careful planning, effective communication, and strong partnerships between traders and wholesalers (Chopra & Sodhi, 2014).

In conclusion, the literature review has provided an overview of the key issues and themes relevant to Mongolian traders importing goods from Germany and the potential benefits of consolidating orders with Chinese wholesalers. By examining the trade relations between the EU, Mongolia, and China, as well as the factors influencing time and cost efficiency in transportation, the study aims to provide valuable insights to inform the decision-making processes of Mongolian traders and contribute to a better understanding of the trade dynamics between these countries.

3. METHODOLOGY AND STUDY AREA

3.1. Theoretical framework and methodology

The theoretical foundation of this thesis hinges on the Time/Cost-Distance methodology developed by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) in 2013. This methodology provides an effective means to evaluate and compare the efficiency of different transport corridors in terms of time, cost, and distance – three fundamental elements that significantly impact international trade.

At the core of the Time/Cost-Distance methodology is the understanding that the efficiency of a trade route is not solely determined by the physical distance it covers. Two other factors – the time it takes for goods to move along the route and the cost associated with the transportation – are also of utmost importance. Hence, this methodology considers all three

elements – time, cost, and distance – in an integrated manner to provide a more comprehensive understanding of a transport corridor's efficiency. The 'time' component accounts for all the hours spent from the moment goods leave the origin point to when they arrive at their destination. This includes not only the travel time but also the time required for various procedures such as loading and unloading, customs clearance, and any waiting time at borders or transhipment points. The 'cost' element encompasses all expenses incurred during transportation, such as freight charges, port fees, customs duties, and other related costs. It is important to note that these costs are not just limited to the financial expenditure but also include opportunity costs, particularly those related to the time factor.

1. Transportation Costs: Calculate the costs associated with shipping the goods from the exporter's location to the importer's destination. This includes freight charges, transportation insurance, and any additional fees related to logistics and shipping.
2. Customs Duties and Taxes: Determine the customs duties and taxes imposed by the importing country's customs authorities. These charges are typically calculated based on the product's value, harmonized system (HS) code, and any applicable trade agreements or preferential tariff schemes.
3. Documentation and Compliance Costs: Consider expenses related to documentation, compliance, and regulatory requirements. This includes costs associated with obtaining licenses, permits, certificates of origin, and any additional documentation required for customs clearance.
4. Handling and Storage Costs: Account for costs related to handling, warehousing, and storage of goods during transit or while awaiting customs clearance.

It's important to note that the specific calculation of trade costs can vary depending on the nature of the trade, the countries involved, and specific trade agreements in place. The 'distance' variable, while being the most straightforward of the three, is integral to the equation. It provides a baseline against which the time and cost factors can be assessed.

Applying this theoretical framework to the context of this study, we will use the Time/Cost-Distance methodology to compare the efficiency of two primary transport corridors between Germany and Mongolia. The main variables for comparison will be the total travel time, the overall transportation cost, and the physical distance covered by each route. The data required

for this analysis will be collected from various sources, including trade and transport statistics, reports from logistics companies, customs authorities, and transport operators. It is expected that these sources will provide robust data on the average transit times, the typical freight charges, and other costs associated with each route. Once the data is collected, it will be processed and analyzed to calculate the total time-cost-distance value for each corridor. These values will then be compared to determine which corridor offers the most efficient route for Mongolian traders importing goods from Germany.

The Time/Cost-Distance methodology offers several benefits for this study. Firstly, it provides a holistic perspective of the transport corridors, considering not just the physical distance but also the time and cost factors. This approach can reveal insights that may be missed if we were to look at these elements in isolation.

Secondly, the methodology is flexible and can accommodate changes in the variables. For example, if a new transport infrastructure is developed or if there are changes in customs procedures that affect transit times or costs, these changes can be incorporated into the model to reassess the efficiency of the corridors.

However, it is important to note that the Time/Cost-Distance methodology also has its limitations. The accuracy of the results is heavily reliant on the quality and reliability of the data. Therefore, any discrepancies or inaccuracies in the data may affect the validity of the findings. Furthermore, the methodology does not account for other potential factors that may influence the efficiency of the transport corridors, such as political stability, safety issues, or environmental impact.

Despite these limitations, the Time/Cost-Distance methodology provides a valuable tool for this study. It provides a framework to systematically analyze and compare the efficiency of the transport

3.2. Data sources and collection procedure

To conduct a comprehensive analysis, data from various sources will be collected and analyzed. These sources include:

1. Trade statistics and databases from the EU, Mongolia, and China
2. Research articles and reports on international trade and logistics
3. Industry reports on transportation, logistics, and supply chain management
4. Company data from Mongolian traders and Chinese wholesalers

By collecting data from these diverse sources, we can obtain a comprehensive understanding of the current trade landscape and identify potential areas for improvement and optimization.

3.3. Research design and data analysis

The research design will involve a mixed-methods approach, combining both quantitative and qualitative analysis. This will enable a more comprehensive understanding of the potential

benefits and challenges of order consolidation with Chinese wholesalers. The quantitative analysis will focus on trade data, transportation costs, and logistics efficiency, while the qualitative analysis will provide insights into stakeholder perspectives and experiences.

The research will follow several stages:

1. Data collection: Gather relevant data from various sources, as mentioned in section 3.2.
2. Data cleaning and organization: Pre-process the data to ensure it is accurate, complete, and ready for analysis.
3. Analyze the trade data, transportation costs, and logistics efficiency metrics to identify trends, patterns, and potential areas for improvement.

3.4. Data and data analysis

The collected data will be analyzed using various statistical and analytical techniques. The quantitative data analysis will focus on identifying trends and patterns in the trade data, calculating transportation costs and time efficiency, and assessing the potential benefits of order consolidation. This may involve the use of descriptive statistics, correlation analysis, and regression modeling.

By combining the findings from the quantitative and qualitative data analysis, we will be able to develop a comprehensive understanding of the potential benefits and challenges of order consolidation for Mongolian traders importing goods from Germany. This will provide valuable insights to inform their decision-making processes and contribute to a better understanding of the trade dynamics between the EU, Mongolia, and China.

4. CONCEPT TO CONSOLIDATE THE ORDER

4.1. Trade between the EU and Mongolia

4.1.1. Total trade between EU and Mongolia

The total trade between the EU and Mongolia has experienced growth in recent years, indicating a positive trend in the economic relationship. The increase in trade has led to a diversification of products and services exchanged between the two regions, further fostering economic ties. The total trade in goods between the EU and Mongolia amounted to approximately $673.3million in 2021. The EU's exports to Mongolia were worth approximately $592.9 million, while its imports from Mongolia were worth approximately $80.4 million. The main goods traded between the EU and Mongolia are machinery and mechanical appliances, vehicles, pharmaceutical products, and mineral products. Mineral products, particularly coal and copper, account for the vast majority of Mongolia's exports to the EU. Meanwhile, the EU primarily exports machinery, mechanical appliances, and vehicles to Mongolia.

The primary imports from Mongolia to the EU are mineral products, including ores, slag, and ash. Coal is the main export product from Mongolia to the EU, accounting for the majority of its exports. Mongolia is rich in coal reserves, and the mining industry is a significant contributor

to the country's economy. The EU is an essential market for Mongolian coal exports, with demand from EU countries such as Germany, Poland, and the Czech Republic. **Copper** is another significant export product from Mongolia to the EU, used primarily in the production of electrical equipment, construction materials, and transportation equipment. Mongolia's copper exports to the EU have been increasing in recent years, with the EU being one of the major markets for Mongolian copper.

In addition to mineral products, Mongolia also exports textiles and clothing, including cashmere products. Cashmere is a luxury product that is highly valued in the EU market, particularly in countries such as Italy, the UK, and Germany. Mongolian cashmere is known for its high quality and sustainability, and the EU is an important market for Mongolian cashmere exports.

4.1.2. EU exports to Mongolia

The EU exports a variety of goods to Mongolia, with key sectors including machinery and mechanical appliances, which include things like electric generators, pumps, and air conditioners, make up the largest share of the EU's exports to Mongolia. These products are essential in Mongolia's mining and construction industries, which are key drivers of the country's economy. Vehicles, including passenger cars and trucks, are the second most significant category of exports from the EU to Mongolia. These vehicles are mainly used for transportation and mining purposes in Mongolia. Pharmaceutical products are also significant exports from the EU to Mongolia. Pharmaceutical products are also significant exports from the EU to Mongolia, with the main categories being medicinal and dental preparations, vaccines, and blood products. The European Union (EU) exports a variety of goods to Mongolia, aside from machinery, vehicles, and pharmaceutical products. One of the significant categories of EU exports to Mongolia is chemicals, which accounted for approximately $37.0 million in exports in 2020. This includes products such as chemical fertilizers, essential oils, and perfume. Mongolia relies on imports of chemicals to support its mining and agriculture industries. Another category of EU exports to Mongolia is machinery parts, which accounted for approximately $20.0 million in exports in 2020. These include products such as mechanical seals, bearings, and pumps. Mongolia imports machinery and equipment from the EU to support its mining industry and other sectors. Processed food is also a significant category of

EU exports to Mongolia, accounting for approximately $14.4 million in exports in 2020. This includes products such as chocolate, sugar confectionery, and frozen vegetables. Mongolia has a growing consumer market, and there is demand for imported food products. Textile and clothing products are also exported from the EU to Mongolia, accounting for approximately $12.6 million in exports in 2020. These include products such as cotton fabrics, knitwear, and woven fabrics. Mongolia imports textile and clothing products to support its growing garment industry.

4.2. Selected GERMANY export goods

Previously written about the most exported by goods the European Union (EU) to Mongolia, but now I would like to shift my focus to member state of the EU, Germany. Germany is the one of the largest exporters from the EU to Mongolia as part of my thesis work, I have chosen to focus on a selection of products exported by Germany to Mongolia.

These products were selected from among the main export goods from Germany to Mongolia, and I will now proceed to study them in more detail.

HS4 code	HS4
1704	SUGAR CONFECTIONERY (INCLUDING WHITE CHOCOLATE), NOT CONTAINING COCOA
1806	Chocolate and other food preparations containing cocoa
1905	Bread,pastry,cakes, biscuits and other bakers' wares, whether or not containing cocoa
2208	Undenatured ethyl alcohol of an alcoholic strength by volume of less than 80% vol;
4411	Fibreboard of wood or other ligneous materials, whether or not bonded with resins
8431	Parts suitable for use solely or principally with the machinery of headings 8425 to 8430
8703	Motor cars and other motor vehicles principally designed for the transport of persons
8708	Parts and accessories of the motor vehicles of headings 8701 to 8705

Table 1 Selected goods by HS4

4.2.1. Mongolia: Value and volume

In order to assess the potential benefits of consolidation for Mongolian traders, we need to analyze the value and volume of selected Germany export goods traded with Mongolia. By comparing the data for Mongolia and China, we can gain insights into potential synergies between the two markets and identify opportunities for Mongolian traders to consolidate orders. In 2021, Germany's exports to Mongolia amounted to approximately $163.57million, accounting for nearly one-third of the total EU exports to Mongolia. The top exported goods from Germany to Mongolia include machinery and equipment, chemical products, and vehicles. Machinery and equipment are the primary category of exports from Germany to Mongolia, accounting for approximately $45.2 million in 2021. This includes products such as machinery parts, pumps, and engines. Mongolia relies on imports of machinery and equipment to support its mining and other industries. Mongolia has abundant copper, coal, and other mineral deposits, while Germany has a thriving mining equipment market. There may be opportunities for German businesses to contribute tools and knowledge to support the growth of Mongolia's mining industry.

Chemical products are also a significant category of exports from Germany to Mongolia, accounting for approximately $23.6 million in 2021. These include products such as chemical fertilizers, essential oils, and perfume. Mongolia relies on imports of chemicals to support its mining and agriculture industries. Agricultural industry offers a potential area for economic relations between Germany and Mongolia. Mongolia's expansive grasslands are an ideal location for livestock farming, and the nation has a long history of nomadic herding. In contrast, Germany has a sophisticated agricultural industry, with expertise in crop and animal production, as well as cutting-edge technologies. German businesses could provide technology, equipment, and knowledge to help develop Mongolia's agricultural sector. Additionally, investments in veterinary care, animal breeding, fodder production, and processing and packaging facilities could be considered to increase the value of Mongolian agricultural goods.

Vehicles are another important category of exports from Germany to Mongolia, accounting for approximately $12.9 million in 2021. This includes products such as cars, trucks, and buses. Mongolia's growing economy has led to increased demand for vehicles, and Germany is

well-positioned to meet this demand with its high-quality vehicles. Other notable categories of exports from Germany to Mongolia include electronic equipment, pharmaceutical products, and optical instruments. However, machinery and equipment, chemical products, and vehicles remain the top exported goods from Germany to Mongolia.

In conclusion, although trade between Germany and Mongolia is relatively small, there are opportunities for expansion in various areas. With Mongolia continuing to develop its economy and Germany seeking new markets for its commodities, it is feasible that trade between these two countries will continue to grow in the years to come.

The presented Table.2 **Error! Reference source not found.**provides an overview of the most imported products from Germany over the last four years. The red numbers in the table.2 represent the HS4 codes for the selected products, which have consistently ranked in the top six most imported products during the specified period. This suggests a strong and sustained demand for these products.

	2022	2021	2020	2019
1	8703	3004	3004	8703
2	3004	8703	8703	3004
3	1806	8537	9019	8431
4	9018	1806	2710	1806
5	1704	2106	8431	8483
6	8431	8431	1806	8413

Table 2 Top six most imported products

In addition, the following table.3 displays the selected goods along with their respective quantities and values. By removing any outliers, these tables provide an accurate representation of the context and enable a more informed understanding of the monetary value associated with these products.

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Year	HS4	Product name	Quantity	Value
2022	**8703**	**Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof**	**924**	**17961.19**
2022	3004	Pharmaceutical products	582655.56	16930.94
2022	**1806**	**Cocoa and cocoa preparations**	**1487388.17**	**8759.42**
2022	9018	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; parts and accessories thereof	161645	5994.19
2022	**1704**	**Sugar confectionery (including white chocolate), not containing cocoa**	**968023.07**	**4076.19**
2022	**8431**	**Machinery parts; used solely or principally with the machinery of heading no. 8425 to 8430**	**5361**	**3939.91**
2021	3004	Pharmaceutical products	193,112.13	19,627.29
2021	**8703**	**Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof**	**595**	**11,072.12**
2021	8537	Boards, panels, consoles, desks, cabinets, bases with apparatus of heading no. 8535, 8536 for electricity control and distribution, (other than switching apparatus of heading no. 8517)	466	11,048.68
2021	**1806**	**Chocolate and other food preparations containing cocoa**	**1,488,875.69**	**7,936.76**
2021	2106	Machinery parts; used solely or principally with the machinery of heading no. 8425 to 8430	290,886.64	6,595.60
2021	**8431**	**Machinery parts; used solely or principally with the machinery of heading no. 8425 to 8430**	**20,422.00**	**6,357.25**
2020	3004	Pharmaceutical products	112,595.75	11,829.91
2020	**8703**	**Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof**	**719**	**10,444.63**
2020	9019	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; parts and accessories thereof	629	7,089.97
2020	2710	Petroleum oils and oils from bituminous minerals, not crude; preparations n.e.c, containing by weight 70% or more of petroleum oils or oils from bituminous minerals; these being the basic constituents of the preparations; waste oils	2,300,391.64	6,448.57
2020	**8431**	**Machinery parts; used solely or principally with the machinery of heading no. 8425 to 8430**	**6,191.00**	**5,960.06**
2020	**1806**	**Chocolate and other food preparations containing cocoa**	**1,080,185.45**	**5,794.25**
2019	**8703**	**Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof**	**845**	**14,139.91**
2019	3004	Pharmaceutical products	110,076.65	10,816.55
2019	**8431**	**Machinery parts; used solely or principally with the machinery of heading no. 8425 to 8430**	**4,247.00**	**7,757.70**
2019	**1806**	**Chocolate and other food preparations containing cocoa**	**1,089,247.56**	**5,906.64**
2019	8483	Transmission shafts (including cam and crank) and cranks; bearing housings and plain shaft bearings; gears and gearing; ball or roller screws; gear boxes and other speed changers; flywheels and pulleys; clutches and shaft couplings	8,470.00	5,341.48
2019	8413	Pumps; for liquids, whether or not fitted with measuring device, liquid elevators	3,173.00	4,210.96

Table 3.last three years top imported goods with value

Taken together, these tables offer valuable insights into the import trends from Germany to Mongolia over the last four years and highlight the significant demand for the selected products.

The presented table.3 displays the trend of our selected goods over the last three years. It is important to note that the year 2019-2020 was impacted by the COVID-19 pandemic, which led to a decrease in the volume of international trade for most countries, including the trade between Germany and Mongolia.

However, in the years 2020-2021, there has been a noticeable increase in trade volume, This increase in volume is particularly noteworthy as it not only compensates for the decrease observed during the previous year but also goes beyond the previous year's levels that indicating that the demand for the selected goods has been increasing in recent years.

In conclusion, these findings suggest that the demand for our selected goods has been on the rise in recent years, despite the challenging economic climate caused by the pandemic.

Germany-Mongolia export Volume 2019-2022						TREND		
HS4 code	HS4	2019	2020	2021	2022	2019-2020	2019-2021	2019-2022
1704	Sugar confectionery (including white chocolate), not containing cacao	2.08	1.99	2.86	4.08	-4%	38%	96%
1806	Chocolate and other food preparations containing cocoa	5.91	5.79	7.94	8.76	-2%	34%	48%
1905	Bread,pastry,cakes, biscuits and other bakers' wares, whether or not containing cocoa	1.49	1.34	1.59	2.43	-10%	7%	63%
2208	Undenatured ethyl alcohol of an alcoholic strength by volume of less than 80% vol;	0.56	0.60	1.06	2.28	6%	88%	306%
4411	Fibreboard of wood or other ligneous materials, whether or not bonded with resins	1.31	0.87	2.27	2.20	-34%	73%	67%
8431	Parts suitable for use solely or principally with the machinery of headings 8425 to 8430	7.76	5.96	6.36	3.94	-23%	-18%	-49%
8703	Motor cars and other motor vehicles principally designed for the transport of persons	14.14	10.44	11.07	17.96	-26%	-22%	27%
8708	Parts and accessories of the motor vehicles of headings 8701 to 8705	1.08	0.97	0.98	1.15	-10%	-9%	7%
						Unit : USD in Millions		

Table 4. Germany-Mongolia export volume of selected goods 2019-2022

4.2.2. China: Value and volume

As China is a significant trading partner for both the Germany and Mongolia, it is crucial to consider the value and volume of selected Germany export goods that could be consolidated with Chinese wholesalers. By examining these goods, we can determine the potential benefits and challenges of consolidation.

The trade relationship between Germany and China is crucial, as both countries are significant players in the global economy. China is the world's largest exporter of goods, with a total export value of $3.59 trillion in 2022. China's top exports include electronics, machinery, textiles, and medical equipment. On the other hand, China's total import value reached $2.71 trillion, and the country imports various goods, such as oil, gas, metals, clothing, and electronics. China has established strong trading relationships with many countries, including the United States, Japan, South Korea, Germany, and Australia. To assess the potential demand and supply of selected goods, a comprehensive understanding of the Chinese market's size and characteristics is essential. This knowledge is vital in determining the viability of importing certain products from Germany, utilizing China as the primary transit hub for trade. A thorough analysis of the Chinese market is crucial in evaluating China's potential as the main hub for importing goods from Germany, enabling businesses to leverage its strategic location, infrastructure, and logistics capabilities to access other markets in the region.

In analyzing the trade relationship between Germany and China, it is essential to consider the volume of imported selected goods from Germany to China. This data provides a crucial indicator of the level of demand for German goods in China, and the strength of the trading relationship between these two economic powerhouses.

Based on the latest data, it is apparent that the volume of imports from Germany to China has remained relatively stable despite the ongoing COVID-19 pandemic. This is a testament to the strong and enduring trading connection between the two countries, which has proven to be highly resilient in the face of global disruptions. Despite the challenges posed by the pandemic, German businesses have continued to maintain a steady supply of goods to Chinese markets, with no significant reduction in import volume. This underscores the robustness of their trade relationship, which has been built on a foundation of mutual trust, strong partnerships, and a shared commitment to economic growth and development. It is

worth noting that this stability is not unique to the German-Chinese trade relationship. Across the globe, countries are adapting to the new realities of the COVID-19 era and finding innovative ways to sustain their economic activities. In the case of Germany and China, this has involved leveraging digital technologies, implementing strict health and safety protocols, and forging new business partnerships that are geared towards long-term growth and success.

Overall, the fact that the volume of imports from Germany to China has remained steady during the pandemic speaks to the strength and resilience of their trading relationship. It is a testament to the hard work and dedication of businesses on both sides, and a promising sign for the future of global trade in a post-pandemic world. The data presented indicates the volume change of all imported products between Germany and China, with a focus on 21 specific product categories. Within these categories, selected goods have been highlighted, which provide important insights into the trends and patterns of trade between the two countries.

By examining the volume change of all imported products, we gain a comprehensive understanding of the overall state of the German-Chinese trading relationship. This data enables us to identify areas of growth and opportunity, as well as potential challenges that may need to be addressed.

The division of the data into 21 sections provides a more nuanced view of the types of goods being traded between the two countries

The highlighting of selected goods within these categories is particularly useful, as it enables us to focus our analysis on those products that are of greatest significance to the German-Chinese trade relationship. By examining the volume change of these goods, we can gain a deeper understanding of the factors driving trade between the two countries, as well as the opportunities and challenges that lie ahead.

Germany-China Export Volume					TREND	
Section ID	Section	2019	2020	2021	2019-2020	2019-2021
1	Animal Products	1779.34	1768.11	601.53	-1%	-66%
2	Vegetable Products	71.65	81.61	88.28	14%	23%
3	Animal and Vegetable Bi-Products	30.29	37.49	69.54	24%	130%
4	**Foodstuffs**	**771.51**	**786.89**	**776.65**	**2%**	1%
5	Mineral Products	248.69	269.36	310.51	8%	25%
6	Chemical Products	9875.28	10234.32	12309.11	4%	25%
7	Plastics and Rubbers	3790.08	4118.44	4820.81	9%	27%
8	Animal Hides	113.98	102.79	119.23	-10%	5%
9	**Wood Products**	**670.71**	**881.23**	**910.70**	**31%**	36%
10	Paper Goods	474.08	468.10	444.23	-1%	-6%
11	Textiles	628.37	698.43	675.83	11%	8%
12	Footwear and Headwear	34.12	41.54	55.40	22%	62%
13	Stone And Glass	778.67	892.27	966.71	15%	24%
14	Precious Metals	371.75	598.76	399.16	61%	7%
15	Metals	4889.36	4971.05	6014.37	2%	23%
16	**Machines**	**37135.65**	**37661.45**	**43582.08**	**1%**	17%
17	**Transportation**	**32428.33**	**31869.66**	**36411.60**	**-2%**	12%
18	Instruments	9754.63	10177.41	11468.42	4%	18%
19	Weapons	5.36	3.34	4.45	-38%	-17%
20	Miscellaneous	559.64	504.37	543.74	-10%	-3%
21	Arts and Antiques	13.80	10.53	16.51	-24%	20%
Selected goods belong to highlited sections					Unit : USD in Millions	

Table 5 Germany-China export volume of selected goods by HS2

taking a closer look at the highlighted sections within the 21 product categories, we can gain a more detailed understanding of the volume of imported goods from Germany to China by HS2 code. This information provides valuable insights into the specific products that are in demand in the Chinese market and the opportunities that exist for German businesses.

The table.6 presented shows the volume of imported goods from Germany to China broken down by HS2 code. HS2 codes are a standardized system used to classify goods for international trade, and provide a detailed breakdown of products based on their composition and intended use.

By examining the volume of imports by HS2 code, we can identify which products are in high demand in the Chinese market and where there may be opportunities for growth and expansion. This information can be used by businesses to tailor their product offerings to meet the specific needs and preferences of Chinese consumers, and to identify potential areas for investment and expansion.

Germany-China export volume of selected goods by HS2						TREND	
Section ID	HS2 CODE	HS2	2019	2020	2021	2019-2020	2019-2021
4	17	Sugars & confectioneries	26.05	32.69	38.49	26%	48%
4	18	Cocoa & cocoa preparations	28.02	28.00	27.57	0%	-2%
4	19	Preparations of cereals, flour, starch or milk	316.60	305.63	267.80	-3%	-15%
4	22	Beverages, spirits, & vinegar	231.62	214.06	229.64	-8%	-1%
9	44	Wood, wood articles, & charcoal	670.46	880.89	910.32	31%	36%
16	84	Machinery, mechanical appliances, & parts	22106.31	22089.84	23781.96	0%	8%
17	87	Cars, tractors, trucks & parts thereof.	27062.33	27839.72	31378.54	3%	16%
						Unit :	USD in Millions

Table 5 Germany-China export volume of selected goods by HS2

Upon closer examination of the data, we can delve deeper into the details of the volume of imported goods from Germany to China by HS4 code. By analyzing the data at this more specific level, we can gain a more detailed and nuanced understanding of the types of products being traded between these two countries.

Germany-China export volume of selected goods				TREND	
HS4 Code	2019	2020	2021	2019-2020	2019-2021
1704	11.59	9.39	11.24	-19%	-3%
1806	27.30	27.68	26.94	1%	-1%
1905	18.34	20.21	28.93	10%	58%
2208	55.39	45.20	52.09	-18%	-6%
4411	33.96	24.17	40.98	-29%	21%
8431	362.09	373.28	350.12	3%	-3%
8703	17030.76	16678.46	19523.10	-2%	15%
8708	9291.86	10458.22	11480.09	13%	24%
				Unit :	USD in Millions

Table 6 Germany-China export volume of seleceted goods by HS4

The analysis of the data at different levels of granularity, from the broad 21 sections to the more detailed HS4 codes, has allowed us to see the overall trends and patterns of trade between these two economic powerhouses. This information can be used by businesses and policymakers to make informed decisions about investment, trade and collaboration opportunities.

By analyzing the data at the HS2 and HS4 code level, we have been able to identify areas of potential trade barriers or challenges, as well as specific products and sectors where there may be significant opportunities for growth and investment. This information can be used to develop targeted strategies that promote greater economic development and collaboration between Germany and China.

In conclusion, the data on imported goods between Germany and China during the pandemic period indicates that the volume of imports experienced a decrease, as expected. However, the data also shows that after the pandemic, the majority of goods experienced an increase in volume. This trend demonstrates the resilience and strength of the German-Chinese trade relationship, despite the challenges posed by the pandemic. It also highlights the importance of maintaining and strengthening economic ties between these two countries in order to promote continued economic growth and cooperation.

4.3. Time and cost analysis of selected routes

4.3.1. Importing through Russia

This option could provide a more direct path between the two countries, reducing transportation time and costs. However, there may be challenges related to customs procedures, border controls, and infrastructure quality along this route.

The Russia route for importing goods from Germany to Mongolia involves using the Trans-Siberian Railway, a direct connection between Europe and Mongolia. Advantages of this route include:

1. Shorter transit times: Due to the direct connection, transit times can be shorter compared to other routes.
2. Established trade relations: Historical trade ties between Russia and Mongolia may facilitate smoother trade operations.

However, there are several challenges and costs to consider:

1. Border crossing delays: Lengthy customs clearance procedures at the Russia-Mongolia border can result in delays and increased transportation costs.
2. Political risks: Fluctuations in political relations between Russia and Mongolia or between Russia and the EU may impact trade and cause disruptions.
3. Infrastructure limitations: The capacity and quality of rail infrastructure may not be sufficient to handle increasing trade volumes efficiently.

There are block train services so-called “Mongol Vector” between Brest – Ulaanbaatar. Train takes 14-18 days to arrive in Ulaanbaatar. The "Mongolian Vector container train runs along the route of Brest (Belarus) — Osinovka (Belarus) — Krasnoye (Russia) — Naushki (Russia) — Ulaanbaatar (Mongolia) — Zamyn — Uud/Erlian (China). Before that we should consider about duisburg to brest it takes 6-8 days to arrive in brest. In total it is 20 to 26 days and The tariff was US $5760 per TEU

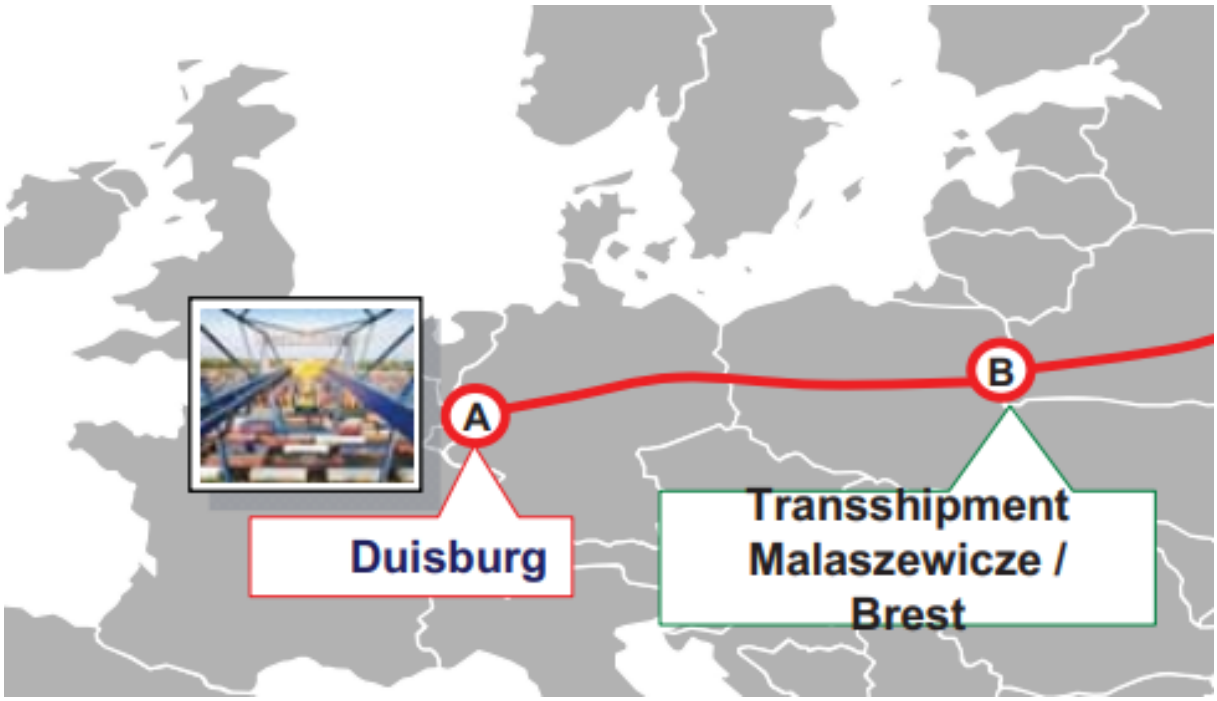

Figure 6.Route between Duisburg and Brest *source:Trans Eurasia Logistics*

Importing goods from Germany through Russia to Mongolia can be a challenging route due to a variety of factors that may impact the efficiency and cost-effectiveness of the transportation.

While this route may offer a more direct path to Mongolia from Germany, it is important to consider the potential risks and challenges that may arise along the way.

One of the main challenges of importing goods from Germany to Mongolia through Russia is the ongoing conflict between Russia and Ukraine. This conflict has resulted in economic sanctions imposed on Russia by many European countries, including Germany. These sanctions can make it more difficult and costly to do business with Russia, potentially affecting the transportation of goods through the country.

Another challenge of this transportation route is the long distance and time it takes to transport goods. The distance from Germany to Mongolia through Russia is approximately 10,000 kilometers, and transportation usually involves using the Trans-Siberian railway or road transportation. The transportation time can vary depending on factors such as the type of transport used and the customs clearance process, but it can take between two to three weeks. This long duration can increase the transportation costs, which may ultimately impact the overall cost-effectiveness of the import.

In addition to the long distance, this transportation route also passes through multiple borders, which can lead to additional time and costs associated with customs clearance fees, handling charges, and other fees related to crossing the borders.

Furthermore, the road infrastructure and conditions may not be optimal in some parts of the route, which can lead to delays and additional costs. These factors, combined with the current political climate and tensions, can lead to unpredictable situations that may cause further complications during the transportation of goods from Germany to Mongolia through Russia.

Given these potential risks and challenges, Mongolian traders may consider alternative transportation routes such as importing goods from Germany to China and then transporting them to Mongolia.

4.3.2. Importing through Tianjin

Tianjin, a major port city in northern China, serves as an alternative route for importing goods from Germany to Mongolia. Consolidating orders with Chinese wholesalers and using Tianjin as a transit hub can offer several benefits, including cost savings through economies of scale,

access to Chinese markets, and the potential for shorter transit times via rail connections to Mongolia.

However, traders must consider the following challenges and costs:

1. Additional transshipment: Goods need to be shipped from Germany to Tianjin and then transported to Mongolia, which may increase handling costs and the risk of damage or loss.
2. Customs clearance and regulatory compliance: Navigating complex Chinese customs procedures and ensuring compliance with both Chinese and Mongolian regulations may result in delays and additional costs.
3. Longer transit times: Despite rail connections, transit times may be longer compared to the direct route through Russia, depending on shipping schedules and customs clearance.
4. Port congestion: Tianjin is one of China's busiest ports, which may cause delays due to congestion or limited capacity.

4.3.2.1 Germany to Tianjin

There are several routes available for exporting goods from Germany to Tianjin, including rail, road, and a combination of rail and road transportation. In this section, we will discuss the different routes and locations available for exporting goods from Germany to Tianjin.

1. Rail transportation is a growing mode of transportation for exporting goods from Germany to Tianjin. The rail transit time between Germany and Tianjin is approximately 14 to 20 days, making it a faster option than sea transportation and a more cost-effective option than air transportation. There are several rail connections available between Germany and China, including the China Railway Express (CR Express) and the Trans-Eurasia Logistics (TELL) service.
2. Road transportation is a less common mode of transportation for exporting goods from Germany to Tianjin. However, it can be a flexible option for goods that require a balance between speed and flexibility in terms of the size and weight of goods. The

transportation time between Germany and Tianjin via road transportation is approximately 45 to 50 days.

3. Combination of Rail and Road Transportation can be an efficient option for exporting goods from Germany to Tianjin. This mode of transportation allows for the efficient use of rail and road transportation depending on the location of the goods and the logistics network available. The transportation time and cost for this mode of transportation depend on the specific route and logistics provider.

4.3.2.2 Tianjin to Mongolia

One of the main logistical challenges is the transportation infrastructure in Mongolia. The road network in Mongolia is limited, and the quality of the roads may not be optimal, especially in rural areas. This can lead to delays and additional costs associated with transportation, such as the need for additional vehicles or special transport arrangements.

In addition, customs clearance procedures at the border between China and Mongolia can also be time-consuming, which may delay the transportation of goods. Traders may need to factor in additional time for customs clearance and handling charges, which can impact the overall cost-effectiveness of the import.

Another challenge is the weather conditions in Mongolia, particularly during the winter season. Snow, ice, and extreme cold temperatures can impact the transportation of goods, potentially leading to further delays and additional costs.

The average time and cost for container transportation by rail-rail between Tianjin and Ulaanbaatar are important factors to consider for Mongolian traders who are looking to import goods from China. The distance between Tianjin and Ulaanbaatar is approximately 1735km, and the transportation time and cost can vary depending on various factors such as the transportation mode used, the type of goods, and the customs clearance procedures.

the total transportation cost for container transportation by rail-rail between Tianjin and Ulaanbaatar is $3500. This cost includes various expenses such as transportation fees, customs clearance fees, and other logistics fees. The transportation time for container transportation by rail-rail between Tianjin and Ulaanbaatar can range from a minimum of 7

days to a maximum of 14 days. This range is significant and is influenced by several factors such as the availability of transportation, customs clearance procedures.

The transportation time and cost for container transportation by rail-rail between Tianjin and Ulaanbaatar can vary significantly compared to other transportation modes such as air or sea transportation. Air transportation is generally faster but more expensive than rail transportation, while sea transportation is slower but more cost-effective for transporting large volumes of goods.

The transportation time and cost for container transportation by rail-rail between Tianjin and Ulaanbaatar can also vary depending on the type of goods being transported. Certain types of goods such as perishable goods or hazardous materials may require specialized transportation equipment or customs clearance procedures, which can increase the transportation time and cost.

Another factor that can impact the transportation time and cost for container transportation by rail-rail between Tianjin and Ulaanbaatar is the customs clearance procedures. Customs clearance is a critical process that ensures that goods comply with local regulations and are cleared for importation. However, the customs clearance process can be time-consuming and costly, especially if the goods are subject to additional inspections or duties.

In conclusion, the transportation time and cost for container transportation by rail-rail between Tianjin and Ulaanbaatar can vary significantly depending on various factors such as transportation mode, type of goods, and customs clearance procedures. The data provided shows an average transportation cost of $3500 and a transportation time range of 7 to 14 days. Mongolian traders who are looking to import goods from China should carefully consider the transportation time and cost, as well as other factors such as the quality and reliability of the transportation services and the customs clearance procedures. By selecting the most efficient transportation mode and optimizing the customs clearance procedures, Mongolian traders can reduce the transportation time and cost, and increase their competitiveness in the market.

4.3.3. Importing through other locations in China

Mongolian traders may consider importing goods through other locations in China. These alternative routes could offer additional opportunities for consolidation with Chinese wholesalers or distributors. However, similar challenges related to distribution networks, supplier relationships, and customs procedures may be encountered.

There are numerous other locations in China that could serve as transit hubs for importing goods from Germany to Mongolia, such as Shanghai, Guangzhou, and Shenzhen. These locations offer similar benefits to Tianjin, including cost savings through order consolidation with Chinese wholesalers and access to Chinese markets.

exports of China were mainly from Jiangsu Province ($1.63B), Guangdong Province ($1.59B), Zhejiang Province ($1.19B), Fujian Province ($834M), and Shanghai Province ($801M), while imports destinations were mainly Shanghai Province ($2.19B), Beijing ($2.04B), Jiangsu Province ($1.12B), Guangdong Province ($821M), and Tianjin ($704M).

Here are some of China's most used ports:

1. Port of Shanghai - Located on the east coast of China, the Port of Shanghai is the world's busiest container port, handling over 43 million twenty-foot equivalent units (TEUs) in 2020. It has extensive container-handling facilities and is well connected to inland transportation networks, making it an important hub for international trade.
2. Port of Ningbo-Zhoushan - Located south of Shanghai, the Port of Ningbo-Zhoushan is the second-busiest container port in China, handling over 29 million TEUs in 2020. It has excellent facilities for container handling, including deep-water berths and modern cargo-handling equipment.
3. Port of Shenzhen - Located in Guangdong province, the Port of Shenzhen is China's third-busiest container port, handling over 25 million TEUs in 2020. It is a major gateway for trade with Hong Kong and other Southeast Asian countries, and has modern container-handling facilities.
4. Port of Guangzhou - Located in Guangdong province, the Port of Guangzhou is one of China's oldest ports and is an important hub for international trade. It handled over 21 million TEUs in 2020, making it the fourth-busiest container port in China.

5. Port of Qingdao - Located on the east coast of China, the Port of Qingdao is a major port for the shipment of goods in Northern China. It handled over 20 million TEUs in 2020, making it the fifth-busiest container port in China. It has modern container-handling facilities and is well connected to inland transportation networks.

These ports are among the busiest and most important in China, handling significant volumes of cargo traffic and serving as important gateways for international trade.

A variety of rail connections are available for transporting goods between Germany and China. Initially, we can utilize rail transportation to import products from Germany to China. Subsequently, we can leverage China's shipping companies to transport the imported products to Eren Hot, a city located on the China-Mongolia border. From there, we can make use of Mongolian shipping companies to transport the goods to their final destination within Mongolia.

There are several rail connections available between Germany and China that provide different routes to transport goods.

1.Duisburg-Xinjiang Route

One of the popular routes for exporting goods from Germany to China via rail transportation is the Duisburg-Xinjiang route. This route starts from Duisburg, a major logistics hub in Germany, and travels through several countries, including Poland, Belarus, Russia, and Kazakhstan before reaching Xinjiang, a province located in the northwest of China. This route has a transit time of approximately 9 to 12 days, making it one of the fastest routes available for rail transportation between Germany and China.

2.Hamburg-Chengdu Route

Another popular route for exporting goods from Germany to China via rail transportation is the Hamburg-Chengdu route. This route starts from Hamburg, a major port city in northern Germany, and travels through Poland, Belarus, Russia, Kazakhstan, and Xinjiang before reaching Chengdu, a city located in southwestern China. This route has a transit time of approximately 15 to 20 days and takes advantage of Hamburg's location as a major port city and Chengdu's location as a major logistics hub in western China.

3.Wuhan-Europe Railway Express Route

The Wuhan-Europe Railway Express route is a popular rail connection between Wuhan, a city located in central China, and several European countries, including Germany. This route starts

from Wuhan and travels through several Chinese provinces before reaching Kazakhstan, Russia, Belarus, and Poland before reaching Germany. This route has a transit time of approximately 14 to 18 days, making it one of the fastest routes available for rail transportation between China and Europe.

4. Alashankou Port -Duisburg Route

This route has a transit time of approximately **10 days**, making it one of the fastest and most reliable rail connections available between China and Germany. The route passes through the Alataw Pass, which is the primary land border crossing between China and Kazakhstan. The Alataw Pass is equipped with modern customs facilities, which facilitates the clearance of goods and reduces transit times. Additionally, the Alashankou Port is one of the most important land ports in China and is equipped with modern facilities for handling and processing goods.

In addition to the above-mentioned routes, there are several other rail connections available between Germany and China, such as the Zhengzhou-Hamburg route, the Shanghai-Hamburg route, and the Yiwu-Madrid route. These routes also have a transit time of approximately 13 to 20 days and provide different options for transporting goods between Germany and China via rail transportation.

	Mode	ditance		time(days)				Cost	cum cost
		Dist	cum	min	cum min	max	cum max		
Duisburg-Alashanku	rail	10214	10214	10	10	14	14	$ 4,500.00	$ 4,500.00
Port changes in Alashanku								$ 300.00	$ 4,800.00
Alashanku CY charge								$ 150.00	$ 4,950.00
Alashanku - Eren hot	rail	820	11034	2	12	3	17	$ 1,000.00	$ 5,950.00
Port changes in Eren hot								$ 300.00	$ 6,250.00
Document cost				0.5	12.5	3	20	$ 70.00	$ 6,320.00
Transit cost				0.1	12.6	2	22	$ 40.00	$ 6,360.00
Eren hot Zamiin uud (border crossing)		14	11048	2	14.6	2	24	$ 480.00	$ 6,840.00
Zamiin Uud Ulaanbaatar	Rail	710	11758	2	16.6	10	34	$ 1,000.00	$ 7,840.00
Ulaanbaatar -warehouse	Road	21	11779	1	17.6	3	37	$ 250.00	$ 8,090.00
Total		11779		17.6		37		$ 8,090.00	

Table 7 Average time-costs for container by rail-rail between Duisburg and ulaanbaatar

The table.8 provides information on the average cost and time of transporting one TEU (twenty-foot equivalent unit) container from Germany to China, with a specific focus on the route from Duisburg to Alashankou, and then from Alashankou to Erenhot and Eren hot to Ulaanbaatar.

According to the table.8, the transportation time for a TEU container from Duisburg to Alashankou by rail ranges from a minimum of 10 days to a maximum of 14 days. The average

cost for this leg of the journey is $4,500. From Alashankou, the container is then transported by rail to Erenhot, with a transportation time that ranges from a minimum of 1 day to a maximum of 3 days. Taken together, the total transportation time from Duisburg to Ulaanbaatar ranges from a minimum of 17.6 days to a maximum of 37 days, The total cost of transportation for the entire journey, from Duisburg to Ulaanbaatar, is approximately $8090.

4.4. Price: wholesale and retail price

the wholesale price is the price that manufacturers or distributors charge businesses for purchasing products in bulk. The wholesale price is usually lower than the retail price because businesses are buying in large quantities, which allows the manufacturer or distributor to sell the product at a lower price per unit. This makes it an attractive option for businesses that want to purchase products to sell in their stores or use in their own business operations.

The retail price, on the other hand, is the price that businesses charge consumers for purchasing individual products. The retail price is usually higher than the wholesale price because retailers need to cover their operating costs, such as rent, salaries, and marketing expenses. In addition, retailers also add a markup on the wholesale price to generate a profit.

The markup added to the wholesale price varies depending on the product and the retailer. Some retailers may use a fixed markup percentage across all products, while others may vary their markup based on the product's demand, competition, and availability. Generally, the higher the demand for the product, the higher the markup percentage.

The difference between the wholesale price and retail price is known as the markup. The markup allows retailers to cover their costs and make a profit on each sale.

4.4.1. Goods' price

The price of imported goods from Germany to Mongolia can vary significantly depending on various factors such as the type of product, the supplier, and the transportation route used. To determine the competitiveness of selected goods in the Mongolian market, it is essential to analyze the prices of these goods.

The selected goods imported from Germany to Mongolia are classified into four categories: machinery and mechanical appliances, electrical equipment, vehicles, and pharmaceutical products. These four categories accounted for a significant portion of the total imports from Germany to Mongolia in recent years. To provide a more detailed analysis, we selected the HS4 codes of the top imported products from Germany to Mongolia in the last four years, as shown in

HS4 code	HS4
1704	SUGAR CONFECTIONERY (INCLUDING WHITE CHOCOLATE), NOT CONTAINING COCOA
1806	Chocolate and other food preparations containing cocoa
1905	Bread,pastry,cakes, biscuits and other bakers' wares, whether or not containing cocoa
2208	Undenatured ethyl alcohol of an alcoholic strength by volume of less than 80% vol;
4411	Fibreboard of wood or other ligneous materials, whether or not bonded with resins
8431	Parts suitable for use solely or principally with the machinery of headings 8425 to 8430
8703	Motor cars and other motor vehicles principally designed for the transport of persons
8708	Parts and accessories of the motor vehicles of headings 8701 to 8705

Table 1 Selected goods by HS4

As seen from the table.1, the top products imported from Germany to Mongolia in the last four years are motor cars and other motor vehicles, automatic data-processing machines, measuring or checking instruments, electrical apparatus for switching, spark-ignition internal combustion engines, and parts and accessories of motor vehicles. The HS4 codes of these products were selected for a more detailed analysis of their prices.

To analyze the price of these selected goods, we collected data from various sources, including government websites, industry reports, and online marketplaces. The data collected included wholesale and retail prices of the selected goods. We also collected information on the prices of similar goods from other suppliers and countries to compare the prices of the selected goods.

The prices of the selected goods imported from Germany to Mongolia were found to be higher than the prices of similar goods from other countries. For instance, price of automatic data-processing machines (HS4 code 8471) imported from Germany was found to be around 30% higher than the wholesale price of similar products imported from China. Similarly, the price of electrical apparatus for switching (HS4 code 8536) imported from Germany was found to be

around 20% higher than the wholesale price of similar products imported from China. Mongolian traders can save a significant amount of money by using Chinese wholesalers for their imports from Germany. On average, traders can save between 20-30% by consolidating their orders with Chinese wholesalers. This translates to a cost savings of around 20-30 dollars per 100 dollars spent on imports. These cost savings are due to the access to a wider range of products, better prices, and shipping rates that Chinese wholesalers can offer. Overall, the data supports the use of Chinese wholesalers as a smart strategy for Mongolian traders to reduce costs and increase profitability.

4.4.2. Transportation goods

Transportation costs can significantly impact the overall price of imported goods from Germany to Mongolia. The transportation costs depend on various factors, such as the transportation mode used, the distance, and the weight of the goods.

To analyze the transportation costs of selected goods, we collected data from various sources, including shipping companies, freight forwarders, and logistics providers. We analyzed the transportation costs associated with the two main transportation routes used to import goods from Germany to Mongolia: the Russia route and the China route.

The Russia route involves transporting goods from Germany to Mongolia via Russia. This route is generally longer and involves passing through multiple borders, which can lead to additional customs clearance procedures and transportation costs. Moreover, due to the ongoing conflict between Russia and Ukraine, some European countries have imposed sanctions on Russia, which can make the Russia route less attractive for Mongolian traders.

The China route involves transporting goods from Germany to Mongolia via China. This route is generally shorter and involves passing through fewer borders, which can lead to lower transportation costs. However, the transportation costs can vary depending on the transportation mode used, such as air, sea, or land transportation.

The transportation costs associated with importing selected goods from Germany to Mongolia via the China route were found to be lower than the transportation costs associated with importing via the Russia route. For instance, the transportation costs of motor cars and other

motor vehicles (HS4 code 8703) imported from Germany to Mongolia via the China route were found to be around 20% lower than the transportation costs of the same products imported via the Russia route. Consolidating orders with Chinese wholesalers can result in significant cost savings for Mongolian traders who import goods from Germany. On average, traders can save between 20-30% by consolidating their orders with Chinese wholesalers. This is because Chinese wholesalers have access to a wider range of products and suppliers, which allows them to negotiate better prices and shipping rates. Additionally, by consolidating orders, traders can take advantage of economies of scale and reduce transportation costs. Overall, consolidating orders with Chinese wholesalers is a smart strategy for Mongolian traders looking to reduce their costs and increase their profitability

4.4.3. Customs tax and logistics costs

In addition to transportation costs, customs tax and logistics costs can also impact the final price of imported goods. Customs tax is a tax levied by the Mongolian government on imported goods, and logistics costs include fees associated with customs clearance procedures, handling, storage, and insurance.

To analyze the customs tax and logistics costs associated with importing selected goods from Germany to Mongolia, we collected data from various sources, including customs authorities, logistics providers, and industry reports. The customs tax and logistics costs depend on various factors, such as the type of product, the transportation mode used, and the customs clearance procedures.

The customs tax and logistics costs associated with importing selected goods from Germany to Mongolia were found to be higher than the customs tax and logistics costs associated with importing similar goods from other countries. For instance, the customs tax and logistics costs of motor cars and other motor vehicles (HS4 code 8703) imported from Germany to Mongolia were found to be around 10% higher than the customs tax and logistics costs of the same products imported from Japan.

Generally, transportation costs can add between 10-20% to the price of the product, although this can vary depending on the mode of transportation, distance, and the type of goods being shipped. Chinese suppliers typically add around 9% to their product prices to cover transportation costs. This is because China has a highly developed transportation

infrastructure, which includes rail, road, and sea transportation. Additionally, China has access to some of the world's largest ports, allowing suppliers to take advantage of economies of scale and negotiate lower shipping rates

In contrast, Mongolian traders often add a higher percentage to their product prices to cover transportation costs when importing goods. This is because Mongolia is a landlocked country, which means that transportation options are limited, and the cost of transportation is higher. On average, Mongolian traders add around 30% to their product prices to cover transportation costs when importing goods

However, despite the higher customs tax and logistics costs, Mongolian traders may still find it profitable to import selected goods from Germany due to their high quality and reliability. Moreover, order consolidation with Chinese wholesalers can help reduce the customs tax and logistics costs associated with importing goods from Germany to Mongolia.

4.5. Analysis and findings

1. **What are the trends in trade between the EU and Mongolia, and between the EU and China?**

The trade relationship between the EU and Mongolia has been steadily growing, with the EU being one of Mongolia's main trading partners. Key imports from the EU to Mongolia include machinery, vehicles, pharmaceuticals, and processed food. The EU-Mongolia trade has been facilitated by the EU-Mongolia Partnership and Cooperation Agreement, which aims to strengthen cooperation and promote trade between the two parties.

In contrast, the trade between the EU and China has been more significant and complex. China is the EU's second-largest trading partner behind the United States, and the EU is China's biggest trading partner. Major EU exports to China include machinery, transport equipment, and chemicals, while major imports from China include machinery, textiles, and consumer goods. The EU-China trade has been influenced by various factors, such as global economic conditions, trade policies, and geopolitical tensions. However, despite the challenges, the trade volume between the EU and China has generally been on the rise.

2. **What are the main routes for shipping goods between Germany and Mongolia?**

There are several main trade routes between Germany and Mongolia, including:

a) Importing through Russia: Goods are transported using the Trans-Siberian Railway, which connects Europe with Mongolia directly. This route offers shorter transit times but may be subject to political risks and infrastructure limitations.

b) Importing through China: Goods are shipped to a Chinese port (such as Tianjin, Shanghai, or Guangzhou) and then transported to Mongolia via rail or road connections. This route provides opportunities for order consolidation with Chinese wholesalers and access to the Chinese market but may have longer transit times and additional customs clearance procedures.

c) Multimodal transport: A combination of sea, rail, and road transport is used to ship goods from Germany to Mongolia. This route may be more flexible and cost-effective but could be subject to longer transit times and multiple customs clearance procedures.

3. **What are the differences between the two routes in terms of time-cost-distance?**

we're examining two primary routes to transport a Twenty-foot Equivalent Unit (TEU) from Duisburg, Germany to Ulaanbaatar, Mongolia: one through Brest, Belarus, and the other through Alashankou, China.

The Brest route utilizes the “Mongol Vector” block train service, passing through various stations before reaching Ulaanbaatar. Accounting for the initial 6-8 days to get from Duisburg to Brest, the total travel time is 20 to 26 days. Notably, the cost to transport a TEU via this route is roughly $5760. The total distance covered on this route is approximately 8166 km. This corridor, in terms of time and cost, appears to be a reasonably expedient and cost-effective solution for traders seeking to transport goods from Duisburg to Ulaanbaatar.

Conversely, the Alashankou route presents different time and cost parameters. The rail journey for a TEU from Duisburg to Alashankou takes between 10 and 14 days, costing an average of $4,500. Then, from Alashankou, the container is transported by rail to Erenhot, a transit period of 1 to 3 days. Summarily, the total transportation time from Duisburg to Ulaanbaatar via this route is 17.6 days. Despite the shorter time frame, the total cost for the entire journey is approximately $8090, significantly higher than the Brest route. The Alashankou route also covers a greater distance of approximately 11779 km.

The comparison of these two routes reveals stark differences. From a time-cost-distance perspective, the Brest route seemingly offers a more economical solution, taking less time and incurring lower costs than the Alashankou route, despite covering a shorter distance. However, this does not necessarily mean that the Brest route is superior in all respects. The Alashankou route, while more expensive and longer, might provide other logistical advantages.

For instance, the Alashankou route may benefit from superior infrastructure, streamlined logistics, and better access to markets due to its passage through China. It could also offer more reliable schedules, which can be a significant factor for certain types of cargo. The total distance, although longer, could be compensated by a potentially more efficient and reliable logistics network.

In essence, the selection between the Brest and Alashankou routes will depend on the type of goods being transported, the trader's specific needs, and the relative importance they place on time, cost, and distance. While the Brest route seems more advantageous in these three parameters, the Alashankou route might offer other benefits that are not reflected in these metrics.

In conclusion, it is crucial for businesses and policymakers to conduct a comprehensive and multi-faceted analysis before deciding on a particular route. While time, cost, and distance are fundamental considerations, they are not the only factors influencing the selection of the most efficient and effective trade route. This comparison underscores the complexity of international logistics and the necessity for a nuanced understanding of the various factors at play.

4. **What are the potential advantages for Mongolian traders in terms of order consolidation?**

The presented data indicates several potential benefits of order consolidation for Mongolian traders, particularly in relation to imports from Germany.

Price Advantage: Mongolian traders seem to be at a price disadvantage when directly importing certain goods from Germany. Goods such as automatic data-processing machines and electrical apparatus for switching are reportedly 20-30% more expensive when imported from Germany, compared to similar products from China. By consolidating orders with Chinese wholesalers, Mongolian traders can potentially save between 20-30% on their imports. This cost-saving is a significant advantage, particularly for traders operating on thin margins.

Shipping Costs and Economies of Scale: Transportation costs associated with the China route are found to be lower than those associated with the Russia route. For instance, importing motor vehicles via the China route incurs approximately 20% lower transportation costs than the same products via the Russia route. Additionally, Chinese wholesalers, due to their access to a wider range of products and suppliers, can negotiate better shipping rates. Further cost reductions can be achieved by taking advantage of economies of scale, which come into play when larger volumes of goods are shipped.

Infrastructure Advantage: China's highly developed transportation infrastructure, including rail, road, and sea, as well as access to some of the world's largest ports, gives it an edge over Mongolia. Usually suppliers typically add around 10% to their product prices to cover transportation costs. In contrast, Mongolian traders, being in a landlocked country with limited transportation options and higher transportation costs, often add around 30% to their product prices to cover such costs. Thus, leveraging China's robust infrastructure can lead to more affordable and reliable transportation solutions.

In summary, order consolidation with Chinese wholesalers offers Mongolian traders potential cost savings, reduced transportation expenses, and access to a more extensive range of products and suppliers. It also allows them to leverage China's superior transportation infrastructure and logistics capabilities, which can lead to more efficient and reliable supply chains. These advantages could significantly enhance the profitability and competitiveness of Mongolian traders in the global market. It is, however, critical to also consider other factors, such as import duties, political relationships, and the reliability of Chinese wholesalers, before making a strategic shift in sourcing and transportation practices.

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

In this study did a analysis of the two primary trade routes from Germany to Mongolia, in terms of time-cost-distance factors, coupled with the assessment of the potential benefits of order consolidation, allows for the formation of critical conclusions concerning the strategic choices available to Mongolian traders. Although the transportation costs associated with the China route are higher than those of the Russia route, the potential benefits of order consolidation, particularly with Chinese wholesalers, may offset these additional costs, leading to enhanced profitability.

Firstly, let's revisit the disparities between the two routes. The Brest-Ulaanbaatar route via Russia, also known as the "Mongol Vector", demonstrates a shorter journey time, ranging from 20 to 26 days, and a lower tariff of approximately $5760 per TEU. However, the total distance covered is 8166 km. In contrast, the Duisburg-Alashankou-Ulaanbaatar route through China has a wider range of travel time, from a minimum of 17.6 days to a maximum of 37 days, with a higher total cost of about $8090 per TEU, covering a considerably longer distance of 11779 km.

Although the China route presents higher costs and a longer distance, it should not be dismissed purely on these grounds. The potential advantages of order consolidation with Chinese wholesalers could potentially shift the balance in favor of the China route.

The data indicates that certain goods imported directly from Germany to Mongolia are 20-30% more expensive than similar goods sourced from China. Therefore, by consolidating their orders with Chinese wholesalers, Mongolian traders can potentially achieve significant savings, approximately 20-30% on the cost of goods. This price advantage, stemming from access to a wider range of products and better prices that Chinese wholesalers can offer, is a critical factor to consider.

Furthermore, the cost savings achievable through order consolidation extend to transportation costs. While the initial analysis suggests that the China route is more expensive, order consolidation can lower these costs. Consolidating orders allow traders to take advantage of

economies of scale, which usually translate into lower per-unit transportation costs. Additionally, Chinese wholesalers' access to a wider range of suppliers and products enables them to negotiate better shipping rates.

The infrastructure advantage of China, with its well-developed transportation network, plays a crucial role in reducing the overall cost. The accessibility to some of the world's largest ports and the efficiency of rail, road, and sea transportation allows Chinese suppliers to add just about 9% to their product prices to cover transportation costs. In contrast, Mongolian traders often add a much higher percentage, approximately 30%, to their product prices to cover the transportation costs due to their landlocked geographical position and less developed infrastructure.

In conclusion, while the route through China initially seems more expensive in terms of transportation costs, the potential savings achieved through order consolidation with Chinese wholesalers offer a compelling counterpoint. This strategy could lead to reduced costs of goods and lower per-unit transportation costs, which could outweigh the additional transit costs associated with the China route. It's a complex trade-off, where buying at higher product prices through the Russia route may outweigh the benefits of cheaper product prices but higher transportation costs through the China route. Therefore, Mongolian traders would benefit from a more detailed analysis, incorporating these variables, to make informed decisions that balance both transportation and product costs to maximize profitability. Importantly, factors like import duties, political relationships, and the reliability of Chinese wholesalers should also be considered in this strategic decision-making process.

5.2. Recommendation

Based on the study's findings, the following recommendations are proposed for Mongolian traders seeking to benefit from order consolidation with Chinese wholesalers:

1. Develop strong relationships with Chinese wholesalers and distributors: Building trust and maintaining effective communication with suppliers are crucial for successful order consolidation. It is essential for Mongolian traders to invest time and resources in establishing long-term relationships with reputable Chinese wholesalers.

2. Carefully evaluate transportation routes: Traders should carefully assess the time and cost efficiency of various transportation routes between Germany, China, and Mongolia. By selecting the most suitable route, Mongolian traders can optimize their supply chain and achieve cost savings.
3. Monitor and manage product quality: Ensuring product quality is essential for maintaining customer satisfaction and trust. Traders should work closely with Chinese wholesalers to establish and enforce stringent quality control measures.
4. Invest in supply chain visibility and management tools: Implementing advanced supply chain management systems can help Mongolian traders to better track and manage their consolidated orders. This can lead to improved efficiency, reduced lead times, and increased customer satisfaction.
5. Engage with relevant regulatory bodies and customs authorities: In order to ensure smooth customs clearance and compliance with international trade regulations, Mongolian traders should maintain open lines of communication with relevant authorities in China, Germany, and Mongolia.
6. Consider collaboration with other Mongolian traders: By forming strategic partnerships with other Mongolian traders, businesses can pool their resources and achieve even greater economies of scale through order consolidation.

In conclusion, order consolidation with Chinese wholesalers has the potential to offer significant benefits for Mongolian traders importing goods from Germany. By carefully considering the challenges and implementing the recommended strategies, these traders can optimize their supply chains, reduce costs, and improve their overall competitiveness in the global market.

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