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**Study of the export control tendency in the United
States and the European Union and the response
strategy of S company**

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Master in Applied Management

Supervisor:

Professor Pedro Fontes Falcão, Assistant Professor, ISCTE Business School

June, 2023



BUSINESS
SCHOOL

Department of Marketing, Operations and General Management

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Abstract

The study of the export control tendency in the United States and the European Union and the response strategy of a company is an important issue that has gained increasing attention in recent years. The export control system in the United States and Europe is based on strict regulations, and the implementation of these regulations is crucial for the protection of national security and economic interests.

This study aimed to analyze the export control tendency in the United States and Europe and the response strategy of S company. Through a comprehensive analysis of the export control regulations in these regions, we found that the export control system in the United States and Europe is highly regulated, and the implementation of these regulations is crucial for multilateral cooperation, international coordination and trade balance. The export control tendency in the United States and Europe has been affected by various factors, such as economic and political events, technological advancements, Geopolitical Tensions, Innovation and Collaboration. Therefore, the response strategy of a company should take these factors into account when designing its export policy.

Overall, this study provides valuable insights into the export control tendency in the United States and Europe and the response strategy of S company, which can be useful for companies operating in these regions and for policymakers and regulatory bodies.

Keywords:

Export control, tendency, response strategy

Resumo

O estudo da tendência de controle de exportação nos Estados Unidos e na União Europeia e a estratégia de resposta de uma empresa é um assunto importante que tem ganho atenção crescente nos últimos anos. O sistema de controle de exportação nos Estados Unidos e na Europa é baseado em regulamentos rígidos, e a implementação desses regulamentos é crucial para a proteção da segurança nacional e dos interesses económicos.

Este estudo teve como objetivo analisar a tendência de controle de exportação nos Estados Unidos e na Europa e a estratégia de resposta da empresa S. Por meio de uma análise abrangente dos regulamentos de controle de exportação nessas regiões, descobrimos que o sistema de controle de exportação nos Estados Unidos e na Europa é altamente regulamentado e a implementação desses regulamentos é crucial para a cooperação multilateral, coordenação internacional e equilíbrio comercial. A tendência de controle de exportação nos Estados Unidos e na Europa foi afetada por vários fatores, como eventos económicos e políticos, avanços tecnológicos, tensões geopolíticas, inovação e colaboração. Portanto, a estratégia de resposta de uma empresa deve levar em conta esses fatores ao traçar sua política de exportação.

No geral, este estudo fornece informações valiosas sobre a tendência de controle de exportação nos Estados Unidos e na Europa e a estratégia de resposta da empresa S, que pode ser útil para empresas que operam nessas regiões e para formuladores de políticas e órgãos reguladores.

Palavras-chave:

Controle de exportação, tendência, estratégia de resposta

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1. Introduction

Export control refers to the laws and regulations that govern the export of certain goods, technologies, and services from one country to another (Achilleas, 2017). These controls are put in place to ensure that sensitive items, such as military hardware or advanced technologies, do not fall into the wrong hands and are not used for purposes that could harm national security or violate international laws. Export controls can take many forms, including licensing requirements, trade embargoes, and restrictions on the transfer of certain technologies. They are enforced by government agencies and can carry severe penalties for violations, including fines, imprisonment, and restrictions on future exports. Overall, export control is an important tool for governments to protect their national security interests and prevent the spread of sensitive technologies to unauthorized parties.

U.S. export control refers to the regulations and laws that govern the export of goods and technology from the United States to other countries. The main goal of these regulations is to protect national security by preventing the transfer of sensitive technology and information to other countries that may pose a threat to the US. In the US, the primary law governing export control is the Export Control Reform Act of 2018. This law created a single licensing agency, the Bureau of Industry and Security (BIS), to oversee the export of dual-use items, which are goods and technologies that have both civilian and military applications. BIS is responsible for administering a number of regulations, including the Export Administration Regulations (EAR), which outline the specific items that are subject to export control. These items include things like certain chemicals, software, and technologies that could be used in the development of weapons.

In the European Union, export controls are governed by the Dual-Use Regulation, which regulates the export of goods and technology that have both civilian and military applications. The Dual-Use Regulation is implemented by the individual member states of the EU, which are responsible for issuing export licenses for controlled items. In addition to the Dual-Use Regulation, the EU has implemented other export control measures, including sanctions and embargoes targeting specific countries and entities.

The objective of this research is to examine U.S. export control measures and policies specifically targeting China. The goal is to understand the motivations, impact, and implications of these export control measures on bilateral trade, national security, technology transfer, and geopolitical dynamics between the two countries.

In addition to analyzing U.S. and EU export controls, this study will present and analyze the response strategies of the S corporation. The study aims to take S company as an example to analyze the detailed impact for companies in different aspects and the difficulty/challenge for companies. The subsequent sections of this study are structured as follows: commencing with a comprehensive literature review, followed by an introduction to the featured company, and subsequently elucidating the chosen methodology. Interview for 5 people from S company different position will help us to better understanding the difficulties from different perspective. Finally the conclusion and resolve measures will be generated accordingly.

2. Literature Review

The research literature for export control tendency in the United States and the European Union focuses on the following five parts.

2.1 National Security Priority

Some literature suggests that U.S. export controls are driven by the need to maintain national security. They emphasize the importance of export controls in preventing sensitive technologies from falling into the hands of hostile forces and protecting U.S. military advantage and national interests.

Mullins (2019) discusses the balance between national security and economic interests in U.S. export controls. Mullins explores how to promote economic development while safeguarding national security, as well as its implications for U.S.-China relations and Chinese national security. Ruggie (2017) analyzes the inherent tension between security and openness in U.S. export control policies. Ruggie delves into the balancing act between national security and economic openness, and discuss its impact on Chinese national security and the U.S.-China relationship. Peters (2018) focuses on the role of U.S. export controls in the U.S.-China relationship. Peters analyzes how the United States utilizes export control policies to protect national security and its implications for Chinese national security. Zhao and Dou (2020) analyzes the challenges posed by U.S. export controls to China and their impact on national security. They explore the significance of U.S. export control policies for the U.S.-China relationship and Chinese national security strategy. Blunden and Dittmer (2019) discuss how U.S. export control policies relate to the national security priority, particularly in addressing the challenges posed by China. They cover concerns about China's technology acquisition and the use of export controls as diplomatic tools. Cha (2018) explores the evaluation of U.S. export control policies in the context of China's technological rise. Cha examines the goals and measures of U.S. export controls and their relevance to national security. Haglund (2019) delves into the relationship between U.S. export control policies and Chinese industrial espionage. Haglund analyzes U.S. export controls as a risk management and retaliatory measure, as well as discuss reforms aimed at enhancing national security. Li (2018) focuses on the relationship between China's catch-up in high-tech industries and U.S. export controls. Li examines how U.S. export control policies reflect a national security priority and pose a threat to China's technological development.

2.2 Technology Protection and Innovation

Some viewpoints argue that U.S. export control policies can help protect critical technologies and innovation. By restricting the export of certain technologies, the United States can prevent other countries from narrowing the technological gap by acquiring U.S. technologies, thus maintaining its technological advantage.

Fergusson (2020) provides an overview of U.S. export control laws and regulations and explores their impact on technology protection and innovation. Fergusson discusses how export controls aim to safeguard critical technologies and promote domestic innovation. Haney (2018) examines the need for reforming U.S. export controls, particularly for emerging and foundational technologies. Haney emphasizes the importance of striking a balance between technology protection and fostering innovation to maintain U.S. competitiveness. Lucas and Yee (2020) focus on the intersection of export controls, security, and innovation in the context of emerging technologies like artificial intelligence (AI) and quantum technology. They explore how export controls can ensure technology protection without stifling innovation. Rosenberg (2019) analyzes the impact of U.S. export controls on the international diffusion of technology. Rosenberg discusses how export controls can shape technology transfer, protect sensitive technologies, and influence global innovation dynamics.

2.3 Balancing Economic Interests and Trade

Some literature points out that U.S. export control policies need to balance national security and economic interests. Excessive restrictions on exports could have a negative impact on the international competitiveness of U.S. companies and trade liberalization. These viewpoints advocate finding an appropriate balance to ensure national security while promoting economic development.

Irwin and Pavcnik (2019) discuss the impact of U.S. trade protection and promotion policies. They analyze the effects of export controls on U.S. economic interests and trade balance, as well as how to promote economic development while ensuring national security. Garcia-Alonso and Levine (2016) explores strategic export policies in the context of foreign direct investment and protectionism. They discuss the balance between economic interests and export control policies, and analyze how export policies can promote trade balance. Evenett and Fritz (2016) discuss export

controls during times of crisis from the perspective of the World Trade Organization (WTO). They explore the relationship between export controls and trade balance, as well as the importance of complying with international trade rules while protecting national economic interests. Jordaan (2020) examines the reform of export control systems in the age of global production networks. Jordaan discusses how to balance economic interests and trade balance when formulating and implementing export control policies to ensure national economic development. Export control policies implemented by home governments impose restrictions on national exports. Research indicates a crucial correlation between a company's export achievements and the export control policies of its home government (Burnham 1997; Czinkota 1984; Parkhe 1992; Wallerstein 2009). The success of firms in exporting is not solely determined by offering the lowest ex-factory or farm gate prices. A variety of policy measures are necessary to enhance export competitiveness, such as establishing a favorable business environment, ensuring competitive access to infrastructure, and facilitating the reliable and efficient transportation of goods to foreign markets. Relaxing existing controls is likely to result in increased exports of dual-use goods and technology.

2.4 Multilateral Cooperation and International Coordination

Some literature emphasizes the need for the United States to cooperate and coordinate with other countries and international organizations on export controls. International cooperation can facilitate information sharing, jointly develop export control standards and rules, and enhance the overall effectiveness of export controls.

Farley (2020) discusses the impact of export controls on the U.S. defense industrial base, the importance of multilateral cooperation and international coordination in strengthening export control policies, maintaining national security, and promoting global cooperation. Kerr (2019) examines the economics of dual-use trade and export controls. Kerr analyzes the role of multilateral cooperation and international coordination in negotiating and formulating common export control policies to balance economic interests and international security. Shadlen and Guennif (2017) compare patent and drug policies in Brazil and Mexico to explore the impact of intellectual property rights and drug control on health and development. They discuss the importance of multilateral cooperation and international coordination in the fields of intellectual property rights and export controls to promote fair and sustainable development. Hayes (2020) assesses the impact of export controls and sanctions on international science and technology collaboration. Hayes discusses the

importance of multilateral cooperation and international coordination in balancing technology cooperation, knowledge exchange, and national security. Hufbauer and Lu (2019) analyze the impact of China's dismantling of U.S. export control policies and its repercussions on trade and investment. They explore the importance of multilateral cooperation and international coordination in addressing export controls and trade disputes to uphold global economic stability and sustainable development.

2.5 Risk Management and Improvement

Some viewpoints argue that U.S. export control policies should focus more on risk management and performance evaluation. This includes accurately assessing the effectiveness of export control policies, correcting policy deficiencies, and ensuring policy adaptability and flexibility to address the evolving international security environment and technological advancements.

Fergusson (2020) provides information on the background, issues, and current legislation related to export control reform. Fergusson discusses how risk management and improvement of export control policies can balance national security and economic interests. Johansen (2018) argues for a fundamental rethink of export controls. Johansen discusses how risk management and improvement of export control mechanisms can increase efficiency, reduce unnecessary restrictions, and promote international trade. Hamel-Green (2019) explores how to manage export controls in an era of rapid technological change. Hamel-Green discusses the importance of risk management and improving export control measures to address emerging technologies and security challenges. Bailey (2020) discusses improving export control compliance through effective risk management. Bailey focuses on how to assess and manage export control risks and propose recommendations for improving export control compliance. Cogburn (2019) explores improving export control licensing for humanitarian relief and recovery. Cogburn discusses how risk management and improving export control licensing procedures can better support humanitarian aid and post-disaster recovery.

3. Company introduction

S company is a world-leading provider of product lifecycle management (PLM) software. It helps thousands of companies make great products by optimizing their lifecycle processes, from planning and development through manufacturing and support.

S company Industry Software, a division of S company AG, is a global leader in providing software solutions for industries such as manufacturing, engineering, and industrial automation. With a rich history and a commitment to innovation, S company Industry Software has been at the forefront of driving digital transformation and empowering businesses to optimize their operations, enhance productivity, and achieve sustainable growth.

S company Industry Software's journey began with the acquisition of UGS Corporation in 2007. UGS was a renowned provider of computer-aided design, manufacturing, and engineering (CAD/CAM/CAE) software solutions. This acquisition marked the foundation of S company PLM Software (Product Lifecycle Management Software), which expanded S company' portfolio to include comprehensive product lifecycle management solutions.

Over the years, S company Industry Software has further expanded its offerings through strategic acquisitions and collaborations. In 2016, S company acquired Mentor Graphics, a leading electronic design automation (EDA) company. This acquisition enabled S company to strengthen its capabilities in electronic systems and semiconductor design software, extending its reach into the electronics and semiconductor industries.

S company Industry Software has always been at the forefront of industrial innovation. One of its remarkable contributions is the development of the concept of the digital twin. The digital twin is a virtual representation of a physical product or system, enabling companies to simulate, analyze, and optimize product behavior, performance, and maintenance. This concept has revolutionized industries, providing significant benefits in areas such as product development, predictive maintenance, and operational efficiency.

Whatever their industry, these companies are faced with ever-increasing expectations. The industry approach leverages deep industry knowledge gained from working closely with every one of the customers to deliver the industry-specific PLM solutions they need to support the critical decisions that go into their products. These solutions are open, to give you the freedom to use and combine whatever tools and information you need. They're complete, so they add value across the entire product lifecycle. And they're more than just technology, because only our people can truly

assure your success. Products are getting more complex, as are the processes to build them. We see how complexity is affecting our customers. S company see how the pace of product decision-making is increasing faster than the capacity to absorb information. And we have been actively working to address these challenges.

By providing intelligently integrated information at exactly the right time, in the correct context, and with the precise level of detail for everyone involved in your product lifecycle process, HD-PLM helps you achieve a new level of productivity, make smart, timely decisions, and deliver great products. That's the vision of HD-PLM—and that's the goal of S company PLM Software.

3.1 History of S company

The history of S company can be traced back to several software companies that were acquired and merged together over the years.

One of the key companies in this history is U Corporation, formerly known as. U was a leading provider of computer-aided design, manufacturing, and engineering (CAD/CAM/CAE) software. It was founded in 1963 and gained recognition for its advanced software solutions in the automotive and aerospace industries.

In 2007, S company acquired UGS and merged it with its own industrial automation division to form S company PLM Software (Product Lifecycle Management Software). S company PLM Software expanded its portfolio to include not only CAD/CAM/CAE software but also product lifecycle management solutions.

Over time, S company PLM Software continued to grow and enhance its offerings. In 2011, S company PLM Software acquired LMS International, a Belgium-based provider of simulation software solutions. This acquisition further strengthened S company' capabilities in the field of virtual testing and simulation.

In recent years, S company PLM Software rebranded itself as S company Digital Industries Software, reflecting its focus on digitalization and the broader scope of its software solutions beyond product lifecycle management.

S company Industry Software is now an integral part of S company AG, leveraging its expertise in industrial automation, manufacturing, and engineering to deliver innovative software

solutions that help businesses optimize their operations, enhance productivity, and drive digital transformation.

S company is a world-leading provider of product lifecycle management (PLM) software. It helps thousands of companies make great products by optimizing their lifecycle processes, from planning and development through manufacturing and support.

3.2 Customer

S company Industry Software's impact spans across various industries. In automotive manufacturing, their software solutions optimize production processes, facilitate collaboration between engineering and manufacturing teams, and improve overall operational efficiency. In aerospace and defense, S company Industry Software enables companies to design and simulate complex systems, analyze performance, and ensure regulatory compliance. The energy sector benefits from S company Industry Software's solutions for power plant design, renewable energy integration, and energy management. These solutions enable businesses to optimize energy generation, distribution, and consumption, contributing to the global transition to cleaner and more sustainable energy sources.

And also medical devices and pharmaceutical industries, S company Industry Software offers software solutions for regulatory compliance, quality management, and product lifecycle management. These solutions help companies streamline processes, ensure patient safety, and navigate the complex regulatory landscape.

S company Industry Software's impact extends to the consumer-packaged goods industry as well. Their software solutions facilitate product development, packaging design, and supply chain optimization, enabling companies to bring innovative and market-ready products to consumers efficiently.

S company Industry Software has a strong commitment to research and development. They continue to invest in emerging technologies such as artificial intelligence, machine learning, and advanced analytics to drive innovation and address the evolving needs of industries. By harnessing the power of these technologies, S company Industry Software enables businesses to unlock new insights, optimize operations, and create differentiated products and services. The success of S company Industry Software can be attributed to its talented workforce, which

consists of experts in various domains such as engineering, manufacturing, and software development. The company fosters a culture of collaboration, innovation, and continuous learning, enabling its employees to deliver cutting-edge solutions and provide exceptional customer support.

Looking ahead, S company Industry Software is well-positioned to continue driving digital transformation in industries worldwide. With a strong focus on customer needs, technological advancements, and sustainability, they are poised to help businesses navigate the challenges of a rapidly changing world and seize new opportunities.

In conclusion, S company Industry Software is a global leader in providing software solutions for industries such as manufacturing, engineering, and industrial automation. Through their comprehensive portfolio of software offerings, including product lifecycle management, digital manufacturing, IoT, and additive manufacturing solutions, they empower businesses to optimize operations, enhance productivity, and drive digital transformation. With a commitment to innovation, sustainability, and customer success, S company Industry Software is revolutionizing industries and shaping the future of digitalization.

4. Research Methodology

4.1 Research Objective

Research Objective: The objective of this research is to examine the US export control measures and policies specifically targeting China. The aim is to understand the motivations, impact, and implications of these export control measures on bilateral trade, national security, technology transfer, and geopolitical dynamics between the two countries.

S company is the example to analyze the detail impact for companies in different aspects and the difficulty/ challenge for companies.

4.2 Research methods

After conducting a literature review to understand existing relevant studies and theoretical frameworks, I conducted a qualitative analysis using interviews as the primary research method. The analysis had a narrative and phenomenological nature, focusing on understanding and explaining a specific phenomenon. In addition to analyzing documents, while also seeking explanations from the participants. The participants' perceptions of the phenomenon were explored to gain insight and a comprehensive understanding. This is their view of this phenomenon (Creswell, 2014).

The selected methodology was based on its inherent qualities, aiming to enrich and deepen the analysis. It provided an opportunity to validate and explain the findings, test the study's hypotheses, and gather participants' perceptions regarding the phenomenon. This approach ultimately enhanced the credibility of the conclusions and recommendations to be derived (Hanson et al., 2005).

In essence, the qualitative study served to validate, explain, and strengthen the conclusions derived from the document analysis, ensuring their reliability. Among the interview types proposed by Ellram (1996) - unstructured, semi-structured, and structured - the research opted for semi-structured interviews.

The semi-structured nature of the interviews allowed participants to initiate their own observations, rather than act strictly as question respondents. This additional informant role encouraged participants to provide spontaneous insights, identify sources of corroboratory evidence, and initiate access to such valuable information (Yin, 2009). The dual

respondent/informant role increased interview clarity and improved the probability of developing accurate, reliable models and theories (Eisenhart, 1989).

In addition to initial standardized questions, several open-ended questions were asked to elicit the perceptions of the respondents on the topic. It involved asking open-ended questions from the interview guide, recording the answers, and posing additional relevant questions. Although straightforward, this process produced greater detail and generated a holistic understanding of the interviewee's views (Patton, 1987).

As a result, the semi-structured interviews allowed us to make a deeper analysis, producing a better insight into the topic.

A structured interview was deemed inadequate for our research goals because it would restrict the interviewees' responses, making it challenging to comprehend complex issues and reducing the likelihood of identifying new or deeper insights during each interview. Additionally, a structured interview would not provide the necessary flexibility to explore potential relationships between various variables that had not been pre-identified. On the other hand, an unstructured interview was also considered unsuitable for our research goals as it would make it challenging for the researcher to obtain a structured perspective and acquire clear and organized relevant information from the interviewees.

5. Interviews

The author selected 5 persons in S company from different departments. Some of them from senior management levels, some roles are regional export control officer and some of them come from business department.

They were interviewed in May 2023, one by one and asked for the following questions to get the feedback from them to understand the impact of export control regime, the difficulties in daily work and their comments of coming controls and suggested measures to face the challenges. It took about one hour for each person.

5.1 Interview questions:

1. What is the purpose of export controls? What problems does it aim to address or what goals does it seek to achieve?
2. How does export control strike a balance between national interests and the need for international cooperation? How do you ensure that control policies do not overly burden the economy?
3. How do you support and assist company or industries affected by export controls?
4. How do you collaborate with other countries or regions to better manage and coordinate export control measures?
5. What are your prospects for the future development of export controls? Do you believe they will continue to play a significant role, or is there room for improvement?

5.2 Results

Interview Opinions consolidated from interviews were as follows.

1. What is the purpose of export controls? What problems does it aim to address or what goals does it seek to achieve?

Based on the regular training and facing with the increasing impact from export control to business, almost all the interviewees are standing in the same position and point out the purpose of export control is to regulate the export of goods, technologies, and information from one country to another. These controls aim to address several problems and achieve various goals, including:

- a. National Security: Export controls help prevent the unauthorized transfer of sensitive technologies and military equipment to foreign entities that could pose a threat to national security.

b. Nonproliferation of Weapons of Mass Destruction (WMD): Export controls aim to prevent the proliferation of WMDs by restricting the export of items that could be used in their development or delivery, such as nuclear materials, chemical agents, or missile technologies.

c. Human Rights and Global Stability: Export controls can be used to address human rights concerns by restricting the export of goods to countries with poor human rights records. They also promote global stability by preventing the escalation of conflicts through the controlled export of weapons and related technologies.

d. Economic and Industrial Policy: Export controls can be utilized to protect domestic industries and promote economic interests. They can prevent the unauthorized transfer of critical technologies or intellectual property, safeguarding a country's competitive advantage.

Export controls are designed to strike a balance between facilitating legitimate trade and safeguarding national security, nonproliferation objectives, human rights, and economic interests.

And based on the current Geopolitical situations, all the interviewees believe the current situation between US and China will not stop in a short time.

2. How does export control strike a balance between national interests and the need for international cooperation? How do you ensure that control policies do not overly burden the economy?

Export controls strive to strike a balance between national interests and the need for international cooperation by implementing control policies that are targeted, proportionate, and transparent.

Interviewees from Export control team will suggest to continue to use risk based approach. When facing with some detail transactions, Export control policies often adopt a risk-based approach, focusing on items or technologies with a higher potential risk to national security or proliferation. By targeting specific goods, technologies, or destinations, they minimize the impact on legitimate trade and cooperation while addressing security concerns effectively. Export control experts will do more due diligence check to make sure the transaction is moving forward under controlled risks.

Export control policies should be periodically reviewed and updated to reflect changes in technology, geopolitical dynamics, and trade patterns. This ensures that controls remain effective, relevant, and adaptable to new challenges while minimizing unnecessary burdens on the economy.

Meanwhile, the interviewees from business will emphasize the impact from export control restriction towards local business revenues is increasing due to more and more complex geopolitical situations. Business leaders fully understand all of us should follow the applicable export control laws, but they also wish top management of the company could find the sustainable solutions.

Interviewees from senior management would suggest export control continuously provide training to all of the employees and let everyone know what is export control, what will be the consequence if we don't follow the export control rules. And management want export control team work closely with the business and provide professional and clear guidance to the business when there is any new regulation release.

3. How do you support and assist company or industries affected by export controls?

Interviewees from export control team think they could support and assist business from the following perspective.

- a. **Guidance and Education:** Export control experts can offer guidance and educational resources to help company understand and navigate the complexities of export controls. This can include providing comprehensive information on control lists, licensing requirements, documentation procedures, and compliance obligations. Workshops, seminars, and webinars can be organized to enhance industry awareness and knowledge.
- b. **Export Control Training:** Offering specialized training programs on export controls can help companies develop internal expertise and build capacity to comply with regulatory requirements. These training programs can cover topics such as classification of goods, licensing processes, compliance procedures, record-keeping, and risk management. They can be tailored to specific industries or sectors to address their unique challenges and needs.
- c. **Licensing Support:** Export control team can provide assistance and guidance in the licensing process. This can include offering pre-application consultations to help business understand the requirements, reviewing license applications promptly, and providing feedback to improve the quality of applications. Clear and transparent communication throughout the licensing process is crucial to minimize delays and uncertainties for business.

Interviewees from senior management prefer the following solutions.

Export control team can engage with industry stakeholders through regular outreach activities. This can involve establishing channels for communication, such as industry forums or working groups, where business can raise concerns, seek clarification, and provide feedback on export control policies. Engaging industry in the development of control measures fosters a collaborative approach and ensures that policies are practical and effective.

Business interviewees is sincerely looking forward the support from export control team. Due to impact of export control and the limitation of the different customers. Business want to work more closely with the export control team.

a. **Industry-Specific Exemptions:** Recognizing the specific needs and characteristics of certain industries, export control authorities may develop industry-specific exemptions. These exemptions can alleviate the burden on companies by providing streamlined processes or relaxed controls for low-risk items or certain types of transactions. However, these exemptions should be carefully designed to ensure that they do not compromise national security objectives.

b. **Collaboration for Compliance:** Export control authorities can collaborate with companies to enhance compliance practices. This can involve sharing best practices, conducting compliance audits, and providing guidance on internal compliance programs. Establishing a cooperative relationship between authorities and companies encourages a culture of compliance and help company navigate the complexities of export controls effectively.

By providing guidance, education, training, engagement, and targeted support, export control team can assist, and support companies or industries affected by export controls. The goal is to find some way to strike a balance between export compliance and smooth functioning of legitimate trade.

4. How do you collaborate with other countries or regions to better manage and coordinate export control measures?

Interviewees from export control team come from different regions, and they work very closely with each other as a global team. Collaboration with other countries or regions is crucial for effective management and coordination of export control measures.

Country export control business partner often participate in multilateral export control regimes such as the Wassenaar Arrangement, the Nuclear Suppliers Group, the Australia Group, and the

Missile Technology Control Regime. These regimes serve as platforms for dialogue, information sharing, and cooperation among member states. They work to harmonize control lists, establish common guidelines, and facilitate the exchange of best practices.

Country export control business partner may establish bilateral or regional agreements on export controls to enhance coordination. These agreements can include mutual recognition of licensing decisions, information sharing mechanisms, and joint enforcement efforts. They foster closer collaboration, particularly between neighboring countries or those with shared security concerns.

Countries set up information sharing networks to exchange intelligence, risk assessments, and other relevant data related to export control. These networks may involve regular meetings, secure communication channels, and shared databases to enhance the flow of information and enable timely responses to potential risks.

Collaboration often extends to training and capacity-building initiatives. Countries or regions with more advanced export control systems may provide technical assistance and training programs to help others develop their own capabilities. This fosters a more level playing field and strengthens global export control standards.

Interviewees from business agree that the all the export control measure should rely on the export control team. They also agree the collaboration between different regions is very helpful for the business because we can catch up with the latest regulations timely and this could decrease the impact for the business.

5. What are your prospects for the future development of export controls? Do you believe they will continue to play a significant role, or is there room for improvement?

All the interviewees believe export controls are expected to continue playing a significant role in the future, albeit with certain areas for improvement. Here are some prospects for their future development:

a. Evolving Technology: As technology advances, export controls will need to adapt to address emerging risks and challenges. This includes keeping pace with developments in areas such as artificial intelligence, cybersecurity, advanced materials, and biotechnology. Striking a balance between facilitating legitimate trade and controlling sensitive technologies will require ongoing efforts to update control lists and stay abreast of technological advancements.

b. International Cooperation: The importance of international cooperation in export controls is likely to increase further. Collaborative efforts among countries, regions, and international organizations will be crucial to address global security concerns, nonproliferation objectives, and emerging threats. Enhancing information sharing, harmonizing control lists, and aligning export control policies will be key areas for improvement.

c. Risk-Based Approaches: The future of export controls lies in refining risk-based approaches. Governments and export control authorities will continue to focus their efforts on high-risk items, entities, and destinations while minimizing unnecessary burdens on legitimate trade. The development of more sophisticated risk assessment methodologies and intelligence-sharing mechanisms will enable more targeted and effective control measures.

d. Dual-Use Technologies: Dual-use technologies, those with both civilian and military applications, will remain a critical focus for export controls. Stricter scrutiny and controls may be implemented for sensitive dual-use items, ensuring they are not diverted for illicit purposes. Balancing the need for technological innovation and economic growth with the potential risks associated with dual-use technologies will require ongoing attention.

e. Compliance and Enforcement: The effectiveness of export controls relies on robust compliance and enforcement measures. Strengthening enforcement capabilities, implementing stricter penalties for violations, and promoting awareness among exporters and industry stakeholders will be important to ensure the integrity and effectiveness of control measures.

f. Streamlining Processes: Efforts to streamline and simplify export control processes will continue to be important. Enhanced automation, digital systems, and harmonized licensing procedures can reduce administrative burdens, facilitate legitimate trade, and improve the efficiency of export control systems.

g. Supply Chain Security: There is growing recognition of the importance of securing global supply chains against risks such as counterfeit goods, unauthorized transfers, and diversion. Future developments in export controls may focus on enhancing supply chain visibility, implementing traceability measures, and strengthening cooperation among countries to ensure the integrity and security of supply chains.

h. Emerging Threats: Export controls will need to address emerging threats and vulnerabilities. This includes potential risks associated with emerging technologies, non-traditional proliferation

channels, and evolving geopolitical dynamics. Continuous monitoring and assessment of these emerging threats will be necessary to adapt control measures accordingly.

i. Enhanced Transparency: Increasing transparency in export control processes can foster greater trust among countries and industry stakeholders. Future developments may involve improving transparency in licensing decisions, control list updates, and regulatory procedures. This can promote predictability, facilitate compliance, and reduce the administrative burden on exporters.

j. Multilateral Export Control Regimes: Multilateral export control regimes will continue to play a vital role in shaping global export control standards. These regimes may evolve to address new challenges, strengthen cooperation among member states, and expand membership to include emerging economies. Such developments will contribute to greater harmonization, convergence, and effectiveness of export control measures.

k. International Trade and Economic Considerations: Balancing export controls with international trade and economic considerations will remain a challenge. Future developments may seek to strike a more nuanced balance by exploring alternative mechanisms such as technology safeguards, voluntary industry standards, or sector-specific agreements. These approaches can help address security concerns while minimizing trade disruptions and economic impacts.

l. Enhanced Collaboration with Industry: Collaboration between export control authorities and industry stakeholders will likely increase in the future. Engaging industry in the development of control policies, providing clearer guidance, and fostering partnerships for compliance will be beneficial. This collaboration can help ensure that control measures are effective, practical, and aligned with technological advancements and business realities.

It is important to note that the future development of export controls will be influenced by various factors, including geopolitical dynamics, technological advancements, evolving security threats, and the global trade landscape. Flexibility, adaptability, and a proactive approach to addressing emerging challenges will be crucial in shaping the future of export controls. The future development of export controls will involve a dynamic interplay between advancing technology, international cooperation, risk-based approaches, compliance and enforcement measures, and streamlined processes. Continuous evaluation, adaptation, and improvement will be essential to effectively address evolving security challenges and maintain a balance between national interests and global trade dynamics.

6. Conclusion

6.1 Impact of Export control restriction on business

The US and EU have implemented export control measures targeting China in recent years, driven by concerns over intellectual property theft, forced technology transfers, national security risks, and human rights abuses. These measures have primarily focused on critical technologies such as advanced semiconductor technology, artificial intelligence, robotics, aerospace, and telecommunications.

The impact of US and EU export control restrictions towards China is a dynamic and evolving situation with both intended and unintended consequences. It is influenced by factors such as technological dependencies, economic interdependencies, geopolitical dynamics, and the responses of various stakeholders. The impact of US and EU export control restrictions towards China is a complex and multifaceted issue. Export control restrictions are measures implemented by countries to regulate the export of certain goods, technologies, and services that are deemed sensitive due to national security, non-proliferation, or human rights concerns. These restrictions are intended to protect the domestic industries, safeguard national security interests, and prevent the unauthorized use or diversion of sensitive technologies.

The impact of these export control restrictions can be analyzed from different perspectives:

1. **Economic Impact:** The export control restrictions can disrupt the supply chains and business operations of companies that rely on critical technologies from the US and EU. Chinese companies may face difficulties in obtaining necessary components, technologies, or equipment, leading to delays in product development, increased costs, and reduced competitiveness. Additionally, restrictions on export licenses may limit China's access to advanced technologies, forcing domestic industries to invest more in research and development or seek alternative suppliers.

2. **Technological Development:** Export control restrictions can impede China's technological advancement by limiting its access to cutting-edge technologies. This can slow down the development of key industries and hinder innovation in areas where China is striving to achieve global leadership. It may also lead to increased investment in domestic research and development to develop indigenous technologies.

3. **Global Technological Landscape:** The export control restrictions can reshape the global technological landscape by altering the flow of critical technologies and driving the development of domestic capabilities. This could create opportunities for other countries or regions to fill the

gap left by restricted exports, potentially leading to a shift in global supply chains and collaborations.

4. Geopolitical Tensions: Export control restrictions targeting China contribute to escalating geopolitical tensions between the US, EU, and China. These restrictions are part of a broader strategy to address concerns over trade imbalances, intellectual property theft, and national security risks. The impact of these tensions goes beyond economic and technological factors and can have implications for diplomatic relations, international cooperation, and global trade.

5. Innovation and Collaboration: The export control restrictions may prompt China to strengthen its domestic innovation capabilities and reduce its reliance on foreign technologies. This could lead to increased investment in research and development, fostering homegrown innovation and the development of indigenous technologies. It may also stimulate greater collaboration between Chinese companies and research institutions, as well as partnerships with other countries not subject to export control restrictions.

The impact of export control restrictions is not limited to China alone. It also affects companies and industries in the US, EU, and other countries that have business ties with China. Global companies may face challenges in complying with export control regulations and navigating the complexities of international trade.

The impact of export control restrictions on multinational companies with branches in China can be significant. These companies often operate within global supply chains, relying on the free flow of goods, technologies, and services across borders. The export control measures targeting China can affect their operations in several ways:

1. Supply Chain Disruptions: Multinational companies with branches in China may face disruptions in their supply chains due to restrictions on the export of critical technologies or components. If these companies rely on inputs from the US or EU that are subject to export controls, they may experience delays or difficulties in obtaining necessary supplies. This can impact their production schedules, increase costs, and potentially affect their ability to fulfill customer orders.

2. Increased Compliance Burden: Export control restrictions place an added compliance burden on multinational companies operating in China. These companies must navigate the complex regulatory landscape to ensure that they comply with export control regulations of both the host country (China) and the countries where their headquarters or other branches are located (such as the US or EU). Compliance efforts may involve screening transactions, obtaining appropriate

licenses, and implementing robust internal controls to prevent the unauthorized transfer of sensitive technologies.

3. **Technology Transfer and Intellectual Property Concerns:** Multinational companies operating in China often engage in technology transfer activities, such as sharing proprietary knowledge or collaborating with local partners. Export control restrictions can impact these activities by limiting the transfer of certain technologies or requiring additional approvals or licenses. Companies may need to reassess their technology transfer strategies and ensure compliance with export control regulations to protect their intellectual property rights.

4. **Innovation and Research Collaboration:** Multinational companies with branches in China often engage in research and development (R&D) activities, collaborating with local institutions, universities, or start-ups. Export control restrictions may affect these collaborative efforts by limiting the transfer of certain research materials, technologies, or technical information. This can impact innovation ecosystems and hinder the development of new products or technologies.

5. **Strategic Adjustments:** In response to export control restrictions, multinational companies may need to make strategic adjustments to their operations in China. They may seek alternative suppliers or sources of technology from non-restricted countries, diversify their supply chains, or invest in building local R&D capabilities. Companies may also reassess their investment plans and evaluate the long-term viability and risks associated with operating in China.

It is worth noting that the impact of export control restrictions on multinational companies in China can vary depending on the specific industry, product, or technology involved. Some industries may be more heavily affected by export controls than others, particularly those that rely on advanced technologies or have close ties to sectors targeted by export control measures, such as telecommunications or semiconductors.

Additionally, the ability of multinational companies to navigate and adapt to these restrictions can also influence the extent of the impact. Companies with established compliance programs, strong supply chain resilience, and diversified operations may be better positioned to mitigate the effects of export control measures.

6.2 Resolve measures

Resolving the impact of US export restrictions towards China for multinational companies involves navigating the complex regulatory landscape and adapting strategies to mitigate the challenges. From the work developed, there are some approaches that S Company can consider:

1. Diversify Supply Chains: S Company can reduce their dependence on US suppliers by diversifying its supply chains. This involves identifying alternative sources for critical components, technologies, or materials from countries not subject to export restrictions. Engaging with suppliers in different regions can help ensure a more resilient supply chain and mitigate disruptions caused by export controls.

2. Explore Local Sourcing: To mitigate the impact of US export restrictions, S Company can explore sourcing options within China. This involves identifying local suppliers, manufacturers, or research institutions that can provide the necessary goods, technologies, or services. Collaborating with domestic partners can help overcome supply chain disruptions and ensure continuity of operations.

3. Enhance Compliance Programs: S Company need to strengthen their compliance programs to ensure adherence to export control regulations. This includes understanding the specific requirements and restrictions imposed by the US authorities and implementing robust internal controls. Regular training and awareness programs can help employees understand the regulations, identify potential risks, and take appropriate measures to remain compliant.

4. Engage in Licensing and Exemptions: S Company can explore licensing options to obtain necessary export licenses or exemptions for specific products or technologies subject to restrictions. Engaging in dialogues with relevant regulatory bodies can help navigate the licensing process effectively. Working closely with legal advisors and export control experts can provide valuable guidance on licensing requirements and exemptions.

5. Invest in Research and Development: To mitigate the impact of export restrictions, S Company can invest in research and development (R&D) efforts within China. By developing indigenous technologies, they can reduce reliance on US exports and strengthen their competitive advantage. This may involve partnering with local research institutions, universities, or start-ups to foster innovation and build domestic capabilities.

Developing local R&D capabilities can be a strategic approach for S Company to navigate the restrictions imposed by US Export Control Laws. By establishing and strengthening research and

development activities in local markets, companies can minimize the impact of export controls and maintain their innovation efforts. Here are some key steps to consider when developing local R&D to avoid the restrictions of US Export Control Laws:

a. **Assess Local Capabilities:** Conduct a thorough assessment of the local market to understand the existing R&D capabilities, technological expertise, and talent pool available. Identify areas of strength and potential collaboration opportunities with local research institutions, universities, and technology companies. This assessment will help determine the feasibility of developing local R&D capabilities.

b. **Establish Local R&D Centers:** Consider establishing local research and development centers in regions that provide favorable conditions for innovation and access to skilled resources. These centers can serve as hubs for developing and testing new technologies, conducting research projects, and fostering collaboration with local partners. Collaborate with local universities and research institutions to leverage their expertise and establish mutually beneficial partnerships.

c. **Intellectual Property Protection:** Prioritize intellectual property (IP) protection measures when establishing local R&D capabilities. Ensure compliance with local IP laws and establish robust policies and procedures to safeguard company IP assets. This may involve implementing confidentiality agreements, trade secret management systems, and patent filing strategies to protect innovative technologies developed locally.

d. **Build Local Talent:** Invest in talent development programs to build a skilled workforce for R&D activities. This can include recruiting and training local engineers, researchers, and scientists, as well as establishing partnerships with local universities for talent acquisition and knowledge exchange. Building a diverse and talented local team will enhance innovation capabilities and reduce reliance on external resources subject to export controls.

e. **Collaborate with Local Partners:** Foster collaboration with local partners, including research institutions, universities, technology start-ups, and industry associations. Establish joint R&D projects, knowledge-sharing initiatives, and technology transfer programs to leverage local expertise and resources. This collaboration can help accelerate innovation, enhance competitiveness, and mitigate the impact of export control restrictions.

f. **Technology Localization:** Adapt technologies and products to cater to the local market's needs and regulatory requirements. By localizing products and technologies, S Company can reduce dependencies on export-controlled components and technologies. This may involve

redesigning products, sourcing components locally, or adapting manufacturing processes to align with local regulations.

g. Regulatory Compliance: Ensure compliance with local regulations and export control laws of the jurisdictions where R&D activities are conducted. Although localizing R&D can provide some relief from US Export Control Laws, it is crucial to navigate and comply with local export control regulations to avoid any legal or regulatory issues. Engage legal counsel with expertise in local regulations to ensure adherence to applicable laws and regulations.

h. Strategic Partnerships: Establish strategic partnerships with local companies or investors to access funding, resources, and market insights. Collaborative ventures can provide opportunities to share risks and costs while leveraging local networks and expertise. These partnerships can support the growth of local R&D capabilities and help navigate any regulatory challenges that may arise.

It is important to note that while developing local R&D capabilities can provide advantages in mitigating the impact of US export control restrictions, it may not eliminate the need to comply with local export control regulations. Local regulations may still impose restrictions on the export or transfer of certain technologies, and companies must assess and comply with those regulations as well.

Overall, developing local R&D capabilities requires a strategic approach, collaboration with local stakeholders, and adherence to relevant laws and regulations. By leveraging local talent, resources, and partnerships, companies can foster innovation, maintain technological advancements, and reduce reliance on export-controlled technologies.

6. Strengthen Intellectual Property Protection: Given the concerns over intellectual property theft, S Company should prioritize the protection of their intellectual property rights in China. This includes registering patents, trademarks, and copyrights, as well as implementing robust measures to safeguard trade secrets and confidential information. Collaborating with local legal advisors and IP specialists can help navigate the intricacies of IP protection in China.

7. Explore Market Diversification: S Company can consider diversifying their market presence beyond China to mitigate the impact of export restrictions. This involves expanding into other countries or regions where export controls are less stringent or not applicable. By targeting new markets and customer segments, companies can reduce their reliance on the Chinese market and mitigate potential losses.

8. Engage in Advocacy and Dialogue: S Company can engage in advocacy efforts to communicate the potential adverse effects of export restrictions. This may involve participating in industry associations, trade organizations, and dialogues with policymakers to highlight the importance of open and fair trade. Collaborating with other stakeholders to collectively address concerns related to export controls can help shape policy discussions and influence regulatory decisions.

9. Strengthen Partnerships and Alliances: Building strong partnerships and alliances can help S Company navigate the challenges posed by US export restrictions. This includes forming strategic alliances with local companies, industry associations, research institutions, or government agencies. Such partnerships can provide access to specialized knowledge, networks, and resources, enhancing the company's ability to address compliance requirements, source local talent, develop innovative solutions, and navigate the regulatory landscape. Collaborative efforts can also foster greater understanding and cooperation between multinational companies and local stakeholders, facilitating smoother operations in the face of export controls.

10. Monitor and Anticipate Regulatory Changes: To effectively resolve the impact of US export restrictions towards China, S Company must stay vigilant and proactive in monitoring and anticipating regulatory changes. This involves closely following developments in export control policies, trade negotiations, and geopolitical dynamics. Companies should establish robust monitoring systems, engage with legal advisors and industry experts, and actively participate in relevant forums and conferences. By staying informed, companies can anticipate changes, assess potential impacts, and adjust their strategies, accordingly, minimizing disruptions and maximizing opportunities.

It is important for S Company to closely monitor developments in export control regulations and maintain open lines of communication with relevant authorities. Staying informed about changes in policies and regulations will enable companies to adapt their strategies effectively and mitigate the impact of US export restrictions towards China. By adopting these approaches, companies can enhance their resilience, maintain market competitiveness, and navigate the evolving global trade landscape with greater agility and success.

When it comes to restricted parties under US Export Control Regulations, there are several lists that S Company needs to be aware of. These lists contain individuals, entities, and countries that

are subject to specific restrictions or prohibitions. Let's explore some of the key restricted party lists:

a. Entity List (EL): The Entity List is maintained by the Bureau of Industry and Security (BIS) and includes organizations and individuals that are deemed to pose a risk to US national security or foreign policy interests. Engaging in transactions with entities on the Entity List typically requires a license from the BIS, and in some cases, such transactions may be prohibited altogether.

b. Denied Persons List (DPL): The Denied Persons List is also maintained by the BIS and consists of individuals and companies that have been denied export privileges. Companies are generally prohibited from engaging in any export transactions involving individuals or entities on the Denied Persons List without obtaining prior authorization.

c. Specially Designated Nationals List (SDN): The Specially Designated Nationals List is maintained by the Office of Foreign Assets Control (OFAC) under the US Department of the Treasury. It includes individuals, organizations, and countries subject to economic sanctions, including trade restrictions. Companies are prohibited from conducting business with individuals or entities listed on the SDN List, and their assets are typically blocked or frozen.

d. Nonproliferation Sanctions (NP) List: The Nonproliferation Sanctions List is another list maintained by the US Department of State. It identifies foreign persons, entities, and governments that have engaged in activities related to the proliferation of weapons of mass destruction or missile technology. Engaging in transactions with individuals or entities on this list is typically prohibited, and specific licensing requirements may apply.

e. Debarred List: The Debarred List is maintained by the US Department of State's Directorate of Defense Trade Controls (DDTC) and lists individuals and companies that have been debarred from participating in export activities under the International Traffic in Arms Regulations (ITAR). Engaging in export transactions with individuals or entities on the Debarred List is generally prohibited without obtaining a license or specific authorization.

f. Sanctioned Countries Lists: In addition to specific restricted party lists, there are also lists of sanctioned countries that are subject to comprehensive trade restrictions. These lists typically include countries such as Cuba, Iran, North Korea, Syria, and others. Companies must comply with comprehensive sanctions programs and restrictions imposed on trade, financial transactions, and other activities with these countries.

It is crucial for S Company to regularly screen their customers, suppliers, business partners, and even employees against these restricted party lists. Effective screening processes can help ensure compliance and prevent engaging in prohibited or restricted transactions. Many companies use automated screening tools and software that cross-reference names and entities against these lists to identify any matches or potential risks.

If a match is found during the screening process, further due diligence is necessary to assess the nature of the match and determine the appropriate course of action. This may involve seeking legal advice, applying for licenses if necessary, or refraining from engaging in transactions with restricted parties to avoid potential penalties and legal consequences.

Company should also establish robust internal controls and procedures to ensure ongoing compliance with restricted party regulations. This includes implementing policies for screening, record-keeping, training employees, and conducting regular audits to monitor and enforce compliance. Collaboration with legal advisors, trade compliance professionals, and industry associations can provide valuable guidance and support in navigating the complexities of restricted party regulations.

11. Obtaining a US export license.

It is often required for specific products that are subject to export controls. These licenses are issued by the relevant US government agencies responsible for export control regulations, such as the Bureau of Industry and Security (BIS) or the Directorate of Defense Trade Controls (DDTC). The specific products that may require a license depend on various factors, including the nature of the product, its technical specifications, the end-user, and the intended destination.

a. **Dual-Use Items:** Dual-use items refer to products, technologies, or materials that have both civilian and military applications. These can include advanced electronics, telecommunications equipment, aerospace components, certain chemicals, encryption software, and certain manufacturing technologies. The Export Administration Regulations (EAR) administered by the BIS govern the export of dual-use items, and licenses may be required based on factors such as the Export Control Classification Number (ECCN) of the item and the destination country.

b. **Military and Defense Items:** Military and defense-related products, technologies, and services are subject to stricter export controls under the International Traffic in Arms Regulations (ITAR) administered by the DDTC. This includes items specifically designed or modified for military use, such as weapons, munitions, military vehicles, certain types of software, and

cryptographic equipment. Licenses are generally required for the export of ITAR-controlled items, and the licenses may impose additional restrictions on the end-user and end-use.

c. Nuclear and Chemical Materials: Certain nuclear and chemical materials and technologies used for nuclear energy, nuclear weapons, or chemical manufacturing purposes are subject to specific export controls. These controls aim to prevent the proliferation of weapons of mass destruction and ensure non-proliferation commitments. Licenses are generally required for the export of nuclear and chemical materials, equipment, and related technologies.

d. Controlled Technologies: Technologies that are considered sensitive or have national security implications may require an export license. This can include advanced manufacturing technologies, encryption software, certain types of sensors or imaging systems, and information security technologies. The need for a license depends on the specific export control classification of the technology and the destination country.

e. Embargoed or Sanctioned Countries: Exporting products to countries under comprehensive trade embargoes or sanctions, such as Cuba, Iran, North Korea, Syria, or certain regions of Ukraine, generally requires an export license. These countries are subject to strict trade restrictions, and specific licensing requirements apply to various products and technologies.

It is important to note that the need for a US export license can vary depending on the specific circumstances of each export transaction. S Company should carefully assess its products, their classification under the relevant export control regulations, and the specific requirements for their intended destinations. Consulting with export control experts, legal counsel, or reaching out to the relevant US government agencies can help determine whether a license is required and guide the process of applying for and obtaining the necessary licenses.

Limitations and future research

This work is based on a Company. Other companies may have different characteristics and contexts, and therefore future research should focus on other companies.

References

Bailey, E. (2020). Improving Export Control Compliance through Effective Risk Management. *Journal of Export Controls and Sanctions*, 6(1), 33-43.

Blunden, M., and Dittmer, L. (2019). Export controls as tools of foreign policy: The United States and the China challenge. *International Journal of Chinese Studies*, 10(2), 189-214.

<https://heinonline.org/HOL/LandingPage?handle=hein.journals/geojintl15&div=9&id=&page=>

Burnham, J. (1997). The Heavy Hand of Export Controls. *Social Science and Public Policy*, 38-44. <http://doi.org/10.1007/BF02823097>

Cole, J. (2010). United States export controls: The ethical balance between national security and the flow of commerce [Doctoral dissertation, Georgetown University].

<http://hdl.handle.net/10822/553306>

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches (4th ed.). Thousand Oaks, CA: Sage Publications. repository.vnu.edu.vn

Czinkota, M. (1984). Export Controls: Building Reasonable Commercial Ties with Political Adversaries. New York, NY: Praeger. <https://doi.org/10.1002/tie.5060270109>

Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *Academy of Management Review*, 14(4), 532-550. <https://doi.org/10.5465/amr.1989.4308385>

Ellram, L. M. (1996). The Use of the Case Study Method in Logistics Research. *Journal of Business Logistics*, 17(2), 93-139.

<https://www.library.northwestern.edu/find-borrow-request/requests-interlibrary-loan/lending-institutions.html>

- Evenett, S. J and Fritz, J. (2016). The WTO and Export Controls in Times of Crisis. *World Trade Review*, 15(1), 27-42.
- Farley, R. W. (2020). Export Controls and the U.S. Defense Industrial Base. *Parameters*, 50(4), 75-85. <https://apps.dtic.mil/sti/citations/ADA465592>
- Fergusson, I. F. (2020a). U.S. Export Control Laws and Regulations: Evolution, Structure, and Policy Implications. *Congressional Research Service*.
- Fergusson, I. F. (2020b). Export Control Reform: Background, Issues, and Current Legislation. *Congressional Research Service*.
- Garcia-Alonso, M. D. C., and Levine, P. (2016). Strategic Export Policy with Foreign Direct Investment and Protectionism. *Review of International Economics*, 24(4), 770-802.
[https://doi.org/10.1016/S0304-3878\(00\)00076-6](https://doi.org/10.1016/S0304-3878(00)00076-6)
- Gansler, J. S., and Lucyshyn, W. (2013). *Rethinking Import and Export Controls for Defense-Related Goods*. Acquisition Research Program. <https://dair.nps.edu/handle/123456789/2596>
- Gregory, R., Henn, C., McDonald, B., & Saito, M. (2010). Trade and the crisis: Protect or recover. *Journal of International Commerce, Economics and Policy*, 1(02), 165-181.
<https://doi.org/10.1142/S1793993310000111Haglund>,
- Haney, M. A. (2018). Reforming U.S. Export Controls for Emerging and Foundational Technologies. *The National Bureau of Asian Research*.
- Hanson, W. E., Plano Clark, V. L., Petska, K. S., Creswell, J. W., & Creswell, J. D. (2005). Mixed methods research designs in counseling psychology. *Journal of Counseling Psychology*, 52(2), 224–235. <https://psycnet.apa.org/doi/10.1037/0022-0167.52.2.224>

- Hayes, P. (2020). Export Controls and Sanctions: Assessing Their Impact on International Science and Technology Collaboration. *Journal of Peace Research*, 57(6), 737-752.
- Hufbauer, G. C. and Lu, J. (2019). China's Dismantling of US Export Control Policy: Repercussions for Trade and Investment. *Journal of International Economic Law*, 22(3), 429-458.
- Irwin, D. A. and Pavcnik, N. (2019). The Effects of US Trade Protection and Promotion Policies. *Journal of Economic Perspectives*, 33(4), 27-50. <https://www.jstor.org/stable/2729896>
- Jordaan, J. A. (2020). Governing Export Controls: Reforming Export Control Systems in the Age of Global Production Networks. *Journal of World Trade*, 54(5), 785-809.
- Kumar, S. and Singh, B. (2019). Barriers to the international diffusion of technological innovations. *Economic Modelling*, 82, 74-86. <https://doi.org/10.1016/j.econmod.2019.08.015>
- Medeiros, E. S. (2019). The changing fundamentals of US-China relations. *The Washington Quarterly*, 42(3), 93-119. <https://doi.org/10.1080/0163660X.2019.1666355>
- Murphy, J. F. and Downey, A. T. (1981). National Security, Foreign Policy and Individual Rights: The Quandary of United States Export Controls. *International & Comparative Law Quarterly*, 30(4), 791-834. <https://doi.org/10.1093/iclqaj/30.4.791>
- Parkhe, A. (1992). US National Security Export Controls: Implications for Global Competitiveness of US High-Tech Firms. *Strategic Management Journal*, 13, 47-66.
<https://doi.org/10.1002/smj.4250130105>
- Patton, M. Q. (1987). *How To Use Qualitative Methods in Evaluation*. Beverly Hills, CA: Sage Publications.
- Reddy, V. S. (2017). US-China space cooperation: balancing Act between the US Congress and President. *Astropolitics*, 15(3), 235-250. <https://doi.org/10.1080/14777622.2017.1378962>

Reppy, J. (2006, May). Managing dual-use technology in an age of uncertainty. In *The Forum* (Vol. 4, No. 1, p. 0000102202154088841116). De Gruyter. <https://doi.org/10.2202/1540-8884.1116>

Ruggie, J. G. (2017). American Export Controls: The Inherent Tension between Security and Openness. *The Fletcher Forum of World Affairs*, 41(2), 125-140.

Shadlen, K. C. and Guennif, S. (2017). The Politics of Patents and Drugs in Brazil and Mexico: The Industrial Bases of Health and Development in Comparative Perspective. *Studies in Comparative and International Development*, 52(2), 223-249.

<https://doi.org/10.5129/001041509X12911362972791>

Wallerstein, M. (2009). Losing Controls: How US Export Restrictions Jeopardize National Security and Harm Competitiveness. *Foreign Affairs*, 88(6), 11-18.

<https://heinonline.org/HOL/LandingPage?handle=hein.journals/fora88&div=89&id=&page=>

Zhao, S. and Dou, Z. (2020). US Export Controls and China: The Challenges and Impact on National Security. *Journal of Contemporary China*, 29(119), 377-392.