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A STUDY ON MYANMAR'S RICE EXPORT IN GLOBAL RICE MARKET

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A STUDY ON MYANMAR'S RICE EXPORT IN GLOBAL RICE MARKET

A thesis submitted as a partial fulfillment towards the requirement for the Degree of Master of Development Studies (EMDevS)

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ABSTRACT

As a significant agricultural commodity, rice plays a crucial role in Myanmar's economy and food security, positioning the country as a major rice producer in Southeast Asia. This study explores Myanmar's role in the global rice market, examining the country's export performance from 2010 to 2022 and comparing it with selected ASEAN countries, including Vietnam, Thailand, and Cambodia. Myanmar's rice exports have fluctuated significantly, as reflected in its Export Competitiveness Index (ECI) values over the years. While Myanmar's ECI showed promise in 2010, the country faced challenges in maintaining steady growth due to inadequate infrastructure, lack of modern technology, and stiff competition from more established exporters like Thailand and Vietnam. Findings from this study reveal that Myanmar has yet to fully capitalize on its comparative advantages in rice production. The research suggests that investments in infrastructure, technology adoption, and market diversification are essential to improving Myanmar's export capacity. Moreover, strengthening government policies and enhancing ASEAN cooperation can boost Myanmar's presence in the global rice market.

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LIST OF ABBREVIATIONS

AFTA	ASEAN Free Trade Area
ASEAN	Association of Southeast Asian Nations
BC	Benefit-Cost
BCG	Bacillus Calmette-Guérin (a vaccine for tuberculosis)
COVID	Coronavirus Disease
ECI	Export Competitiveness Index
EU	European Union
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
GAP	Good Agricultural Practices
HYVs	High Yielding Varieties
IRRI	International Rice Research Institute
LDCs	Least Developed Countries
MRF	Myanmar Rice Federation
RCA	Revealed Comparative Advantage
SPS	Sanitary and Phytosanitary Standards
UN	United Nations
USDA	United States Department of Agriculture
WTO	World Trade Organization

CHAPTER I
INTRODUCTION

1.1 Rationale of the Study

Rice is a staple crop and a major agricultural commodity for Myanmar, playing a vital role in both food security and the national economy. Historically, Myanmar was one of the leading rice exporters in the world, with the country having a prominent position in the global rice market in the early 20th century. However, various socio-political and economic challenges over the past decades, including isolationist policies, inadequate infrastructure, and political instability, significantly affected Myanmar's rice export potential (Than, 2007).

In recent years, Myanmar has made substantial efforts to regain its position in the global rice market by improving agricultural productivity, expanding its export markets, and enhancing trade policies. According to the Food and Agriculture Organization (FAO), Myanmar's rice sector has the potential to contribute significantly to economic growth, poverty reduction, and rural development (FAO, 2019). Despite these advancements, Myanmar's rice exports still face numerous challenges such as fluctuating global demand, competition from major rice-exporting countries (e.g., Thailand, Vietnam, and India), and barriers related to logistics, quality control, and compliance with international standards (Myint, 2015).

The study on Myanmar's rice export in the global rice market is crucial for several reasons. First, it will provide insights into the current state of Myanmar's rice exports, including its competitive strengths and weaknesses relative to other leading rice-exporting countries. Second, it will analyze the factors influencing Myanmar's performance in the global rice market, such as production capacity, trade policies, and market access. Finally, understanding the dynamics of Myanmar's rice export sector is essential for formulating strategies to enhance the country's global competitiveness, improve export earnings, and ensure sustainable growth for rural communities dependent on rice farming (Win, 2020).

Given Myanmar's reliance on rice as a major export commodity, this study will contribute to the policy discourse on improving agricultural trade and enhancing Myanmar's integration into the global economy. Additionally, it will highlight the need for investments in infrastructure, capacity building, and international trade agreements to bolster the competitiveness of Myanmar's rice sector.

1.2 Objectives of the study

The objectives of this study are

1. To evaluate the Myanmar’s rice exports in the context of global market.
2. To examine Myanmar’s competitive position in the global rice market.

1.3 Method of study

The research employes a “descriptive method” based on the analysis of “secondary data” to evaluate Myanmar’s rice export performance in the global rice market and assess its competitive position using “Export Competitiveness Index (ECI)”. This method will enable a clear understanding of Myanmar’s comparative performance in the international rice trade. This study is “quantitative” and “descriptive” in nature using secondary data to measure Myanmar's performance in the global rice market by calculating key trade indices. The study design involves collecting, analyzing, and interpreting numerical data to address the research objectives. The study will rely entirely on secondary data sourced from reputable international and national databases. The data cover Myanmar’s rice exports, total exports, and global rice exports from the sources of UN Comtrade, FAOSTAT, USAD, World Bank and for local data on rice production, export policies and performance were obtained from Myanmar Rice Federation and Myanmar’s Ministry of Commerce.

1.4 Scope and Limitations

The data will cover a period of 10 years from 2010 to 2020, allowing for trend analysis and the identification of patterns in Myanmar's export competitiveness over time. The choice of a 10-year period will provide insight into both short-term fluctuations and long-term trends in the rice export market. As this study relies on secondary data, it is limited by the availability and accuracy of data from the sources. Additionally, the analysis may not capture certain qualitative factors (e.g., policy changes or international relations) that could affect Myanmar's rice export competitiveness.

1.5 Organization of the Study

This study contains five chapters. In Chapter 1, there is the rationale of the study, objectives of the study, method of the study, scope and limitations of the study, and organization of the study. Chapter 2 is a literature review, and chapter 3 presents Myanmar's Rice Export In The Global Rice Market . Chapter 4 presents " Data Analysis" Chapter 5 is the conclusion, which includes the findings, and suggestions.

CHAPTER II

LITERATURE REVIEW

2.1 History of Global Rice Market Trends

The global rice market has undergone significant transformations over the decades, influenced by factors such as technological advancements, trade policies, climate change, and shifts in consumer preferences. Historically, rice has been cultivated for thousands of years, with its origins traced back to the Yangtze River Valley in China around 7000 BC. The significance of rice as a staple food led to its widespread cultivation across Asia, which remains the largest producer and consumer of rice globally (Khush, 2005).

In the 19th and early 20th centuries, rice began to emerge as a significant trade commodity. The United States, particularly the southern states such as Louisiana and Texas, became prominent rice producers and exporters. Meanwhile, Asian countries like India and Thailand established their presence in the global rice market, driven by colonial trade routes and increasing demand (Baffes & Haniotis, 2019). By the mid-20th century, the global rice trade was characterized by regional export patterns, with Thailand and India leading as major exporters.

2.1.1 The Green Revolution and Market Expansion

The introduction of high-yielding varieties (HYVs) during the Green Revolution in the 1960s and 1970s had a profound impact on rice production and trade. Countries like India and the Philippines adopted new agricultural technologies, which increased rice yields significantly. This period marked the beginning of an era where countries focused on enhancing self-sufficiency in rice production while also engaging in exports. As a result, rice trade volumes surged, and by the 1980s, the global rice market became more integrated (Pingali, 2007).

2.1.2 Price Volatility and Economic Factors

The global rice market experienced notable price volatility in the late 2000s due to various factors, including climate-related shocks, rising production costs, and increased global demand. For instance, in 2008, global rice prices skyrocketed due to poor harvests in key exporting countries and export restrictions imposed by several nations, leading to food security concerns in importing countries (World Bank, 2008). This period highlighted the interconnectedness of global rice markets and the sensitivity of rice prices to supply shocks.

2.1.3 Recent Trends and Challenges

In the last decade, the global rice market has witnessed shifts driven by changing consumption patterns, trade agreements, and sustainability concerns. Emerging economies in Africa and Asia have seen an increase in rice consumption, leading to higher import demands. Meanwhile, established exporters like India, Thailand, and Vietnam have adjusted their marketing strategies to remain competitive in the global market (FAO, 2021). Additionally, challenges such as climate change, water scarcity, and land degradation have prompted a push towards sustainable rice production practices, influencing market dynamics (International Rice Research Institute [IRRI], 2021).

2.1.4 Future Outlook

Looking ahead, the global rice market is expected to evolve further as countries adapt to environmental challenges and changing consumer preferences. The ongoing need for food security, combined with the increasing importance of sustainability in agricultural practices, will shape the future of rice production and trade. Continued investment in research and development, along with collaboration among stakeholders, will be essential for addressing these challenges and ensuring the resilience of the global rice market.

2.2 Introduction to Rice Exporting Countries

The global rice market is a crucial component of the agricultural economy, serving as a primary source of food for over half of the world's population. As of 2021, rice production reached approximately 500 million metric tons, with the majority being consumed in Asia, where rice is a staple food (Food and Agriculture Organization [FAO], 2021). The top rice-exporting countries, including India, Thailand, and Vietnam, dominate the international market, supplying rice to countries in Africa, the Middle East, and parts of Europe. The rice market is characterized by significant price fluctuations influenced by factors such as climate change, trade policies, and global demand trends (International Rice Research Institute [IRRI], 2021).

2.2.1 Historical Context of Rice Exports from Key Countries

Historically, rice has played a vital role in the economies of major exporting countries. India, as one of the largest producers, has a long-standing tradition of rice cultivation, with significant exports dating back to the colonial era. India's rice exports have grown considerably, especially since the 2000s, when liberalization policies allowed for greater participation in international trade (Singh, 2020). Similarly, Thailand has been a prominent rice exporter for decades, renowned for its high-quality jasmine rice, which is sought after in global markets. The country established its position as a leading exporter during the 1960s and has maintained it through strategic marketing and branding efforts (Baffes & Haniotis, 2019). Vietnam, emerging as a key player in the rice export market since the 1990s, has leveraged its competitive pricing and improved agricultural practices to increase its export volumes significantly (Thang & Anh, 2019).

2.2.2 Importance of Rice as a Staple Food and Economic Commodity

Rice is not only a dietary staple but also a significant economic commodity for many countries. It provides livelihood opportunities for millions of farmers and workers in the agricultural sector. In developing countries, rice cultivation is often linked to food security and rural development, making it essential for poverty alleviation (Pingali, 2015). The economic impact of rice extends beyond agriculture; it influences trade balances, employment rates, and overall economic growth. For

instance, rice exports contribute substantially to the national revenues of key exporting countries, affecting their economic stability and development strategies (FAO, 2021). As such, understanding the dynamics of rice exports and their implications is vital for policymakers and stakeholders in the agricultural sector.

2.3. Global Rice Production and Export History

2.3.1 Historical Background of Rice Cultivation in the World

Rice cultivation has a rich history that dates back thousands of years, with evidence suggesting that it was first domesticated in the Yangtze River Valley of China around 10,000 years ago (Zhao et al., 2018). Over the centuries, rice spread across Asia, becoming a staple food and an integral part of the culture and economy in many countries. The introduction of rice to other regions, including Africa and the Americas, was facilitated by trade and colonization. By the early 20th century, advancements in agricultural techniques, such as irrigation and selective breeding, significantly increased rice yields and cultivation area, establishing rice as one of the world's most important crops (Pingali, 2007).

The rice export sector has evolved considerably over the years. In the mid-20th century, countries such as Thailand and the United States emerged as major rice exporters due to advancements in production technologies and the establishment of export-oriented policies (Dawe, 2007). The 1990s and early 2000s saw significant growth in global rice trade, influenced by changing dietary preferences and population growth in developing nations. During this period, countries like Vietnam and India also expanded their rice export capacities, contributing to increased competition in the global market. As of the late 2010s, rice trade has continued to be shaped by various factors, including climate change, trade policies, and shifts in consumer demand (Miyata et al., 2020).

2.3.2 Current Status of Rice Production and Export Volumes in the World

Currently, rice remains a crucial agricultural commodity, with Asia accounting for approximately 90% of global production and consumption (FAO, 2021). In the 2020/2021 marketing year, global rice production reached approximately 508 million metric tons, with major producers including China, India, and Indonesia. The rice export market has also remained robust, with countries like India, Thailand, Vietnam, and Pakistan being significant exporters. In recent years, global rice exports have

ranged from 40 to 50 million metric tons annually, driven by demand from both traditional markets and emerging economies (USDA, 2021). The ongoing challenges, including trade disputes and the impact of the COVID-19 pandemic, continue to influence the dynamics of the rice export market.

2.4 Rice Export Competitiveness

2.4.1 Factors Affecting Rice Export Competitiveness

1. Agricultural Practices and Technology

The competitiveness of rice exports is significantly influenced by agricultural practices and the adoption of technology. Improved farming techniques, such as integrated pest management, crop rotation, and precision agriculture, can enhance rice yield and quality, ultimately impacting export potential (Pingali, 2012). For instance, the use of high-yielding varieties (HYVs) and advanced irrigation systems has led to increased productivity in several Asian countries, making them more competitive in the global rice market (Khan et al., 2016). Case studies in Vietnam and India illustrate successful technology adoption in rice production, demonstrating substantial gains in both yield and quality, which have contributed to their positions as leading rice exporters (Byerlee et al., 2014). Studies indicate that countries with proactive government policies tend to have stronger rice export sectors and better performance in international markets (Huang et al., 2019).

2. Market Access and Infrastructure

Market access and infrastructure play critical roles in enhancing the export competitiveness of rice. Effective infrastructure, including well-maintained roads, storage facilities, and transportation networks, is essential for the efficient movement of rice from farms to export markets (Baffes & Radelet, 2006). Studies have highlighted that inadequate infrastructure can lead to increased post-harvest losses and reduced market access, ultimately hindering the competitiveness of rice exporters (Berkum et al., 2007). For instance, countries with better road networks and storage facilities have been able to reduce transportation costs and spoilage, thus improving their competitiveness in the global market.

3. Government Policies and Support

Government policies and support mechanisms are vital for fostering a conducive environment for rice exports. Initiatives such as subsidies, trade agreements, and investment in research and development can significantly impact the rice export sector (Wiggins & Brooks, 2010). Governments in major rice-producing countries often implement policies aimed at enhancing productivity, promoting value addition, and ensuring food security, which indirectly supports rice exports. Evaluation of these policies based on existing literature reveals that effective government interventions can lead to increased competitiveness by providing farmers with the necessary resources, technical assistance, and market information (Miyata et al., 2020). Studies indicate that countries with proactive government policies tend to have stronger rice export sectors and better performance in international markets (Huang et al., 2019).

2.4.2 Challenges Faced by Rice Exporters

Rice exporters encounter a multitude of internal and external challenges that affect their operations and competitiveness in the global market. Internal challenges often include inadequate infrastructure, lack of access to financing, and inefficient supply chains, which can hinder production and distribution efficiency (Alavi et al., 2016). Externally, rice exporters face significant risks from natural disasters such as floods, droughts, and typhoons, which can devastate crops and disrupt export schedules (Wassmann et al., 2009). Additionally, market fluctuations, including volatile prices and changing consumer preferences, pose serious risks to exporters' profitability and sustainability (Singh & Jha, 2018). The combination of these challenges complicates the rice export landscape and requires adaptive strategies for successful navigation.

Quality standards and certification requirements in global markets have become increasingly stringent, presenting further challenges for rice exporters. Many importing countries impose specific quality and safety standards that must be met to access their markets (Saha & Reddy, 2016). Compliance with these standards often necessitates investments in better farming practices, processing technologies, and quality assurance systems, which may be difficult for small-scale farmers and exporters to achieve (Jha & Singh, 2015). As a result, the ability to meet quality

certifications can significantly impact a country's competitiveness in the global rice market.

Trade barriers, including tariffs, quotas, and non-tariff barriers, can significantly impede the flow of rice exports. Many countries implement protective measures to safeguard their domestic rice industries, which can limit access to foreign markets for exporting nations (Lopes et al., 2014). Moreover, rice exporters face stiff international competition from other major rice-producing countries such as India, Vietnam, and Thailand, which have established strong market positions and competitive pricing strategies (Kumar & Kaur, 2018). This competition necessitates continuous improvements in efficiency and marketing strategies to ensure that rice exporters can maintain or enhance their market share in the face of growing global challenges.

2.4.3 Impact of Global Market Trends on Rice Exporting Countries

Global market trends play a crucial role in shaping the supply and demand dynamics of rice exporting countries. Factors such as population growth, changing dietary preferences, and economic development in emerging markets have driven an increased demand for rice, particularly in Asia and Africa (FAO, 2020). Additionally, climate change and natural disasters can significantly impact rice production levels, altering supply patterns (Huang et al., 2016). The integration of technology in farming practices, along with the adoption of high-yielding varieties, has also influenced supply capacities, enabling some exporting countries to meet the growing global demand more effectively (Pingali, 2012).

Price fluctuations in the global rice market can have profound implications for exporting countries. When rice prices rise, it can benefit producers by increasing revenues, thereby encouraging higher production levels and investment in agricultural technologies (Narayanan & Ramesh, 2019). Conversely, price drops can squeeze profit margins, leading to reduced investments and potential declines in production (Singh et al., 2018). Such volatility often affects the long-term sustainability of rice exporting countries, especially those heavily reliant on rice as a primary economic driver. Exporters must therefore navigate these price dynamics carefully to maintain their competitive edge.

International trade agreements and policies significantly influence the positioning of rice exporters within the global market. Trade agreements can facilitate

easier access to foreign markets by reducing tariffs and other trade barriers, thereby enhancing competitiveness (López & Jansen, 2020). However, the terms of these agreements often favor larger exporting nations, potentially sidelining smaller producers (Anderson et al., 2017). Furthermore, changing trade policies, such as the imposition of export restrictions or quotas by major rice-producing countries, can create additional challenges for exporters, impacting their ability to effectively respond to global market demands.

2.4.4 Sustainability and Future Prospects of Rice Exports in the Global Market

Sustainable agricultural practices are becoming increasingly vital in the rice export sector as global demand for food rises and concerns over environmental degradation intensify. Practices such as integrated pest management, water-efficient irrigation techniques, and the use of organic fertilizers can enhance soil health, reduce water usage, and minimize pesticide dependency (Erenstein et al., 2018). By adopting these sustainable practices, rice-exporting countries can improve productivity while also addressing environmental concerns, thus ensuring long-term viability in the global market. Furthermore, the demand for sustainably produced rice is on the rise among consumers, presenting an opportunity for exporters to differentiate their products and capture niche markets (Gao et al., 2019).

The future prospects for world rice exports appear promising, driven by several key trends. Growing populations in Asia and Africa are expected to increase demand for rice, and as incomes rise, consumers may shift towards higher-quality and value-added rice products (World Bank, 2021). Additionally, advancements in agricultural technology, such as precision farming and biotechnology, offer potential for enhanced yield and quality, enabling countries to boost their export capacities (Pingali, 2012). Furthermore, the globalization of trade agreements may open new markets for rice exporters, allowing them to capitalize on emerging opportunities in developing regions (FAO, 2020).

Previous studies have identified several potential growth areas for world rice exports, particularly in regions where rice is a staple food (Narayanan & Ramesh, 2019). Innovations in post-harvest technologies, such as improved storage and transportation methods, can significantly reduce losses and enhance the quality of rice exports. Moreover, diversifying rice varieties to include aromatic and specialty rices

can cater to specific consumer preferences in international markets (Huang et al., 2016). As exporters embrace sustainable practices and leverage technological advancements, they are well-positioned to meet the evolving demands of the global rice market.

2.5 Theoretical Frameworks for Analyzing Export Competitiveness

2.5.1 Export Competitiveness Index (ECI)

The Export Competitiveness Index (ECI) is a quantitative measure used to assess a country's ability to compete in international markets. It evaluates various factors that influence export performance, including the volume of exports, market share, and the dynamics of global trade. The ECI is typically calculated by comparing a country's export growth rate to the overall growth rate of the global market for specific commodities, adjusting for factors such as trade barriers and currency fluctuations (Fujii & Managi, 2013). This index is particularly useful for policymakers and researchers in understanding competitive dynamics and identifying areas for improvement in export strategies.

Previous studies have effectively utilized the ECI to analyze rice exports from various countries. For instance, a study by Jayasuriya et al. (2018) examined the ECI of Sri Lankan rice exports and found that factors such as production efficiency, quality standards, and trade agreements significantly influenced the country’s competitive position in the global market. Similarly, studies focusing on Thailand's rice sector have shown how improvements in technology and logistics can enhance export competitiveness, as measured by the ECI (Poonthura & Manomaiphiboon, 2020).

2.6 Review on Previous Studies

Several studies have examined the use of the Export Competitiveness Index (ECI) in evaluating the performance of rice-exporting countries. These studies provide insights into the factors that influence export competitiveness and offer recommendations for improving trade outcomes.

Gootiiz and Mattoo (2016), in their study titled the Role of ECI in Enhancing Rice Export Market Shares, aimed to demonstrate the relationship between a higher ECI and better market shares in key international markets. Their study used data from various rice-exporting countries and focused on the role of favorable policies and

investment in agricultural technology. The findings revealed that countries with higher ECI for rice exports were better positioned to capture larger market shares due to supportive policies and technological advancements.

Batra and Khan (2017) explored the competitiveness of rice exports in South Asia, including Myanmar, using the ECI. Their objective was to assess the impact of supply chain inefficiencies and inconsistent government policies on export competitiveness. Through an analysis of ECI data across the region, the study found that Myanmar's rice export competitiveness was constrained by logistical inefficiencies and policy inconsistencies. To improve Myanmar's position in the global rice market, the researchers recommended reforms in logistics and alignment with global trade standards.

Soe and Aung (2018) conducted a study titled Challenges and Opportunities for Myanmar's Rice Export Sector, focusing on the specific challenges faced by Myanmar in the rice export market. Their objective was to identify opportunities to enhance Myanmar's competitiveness. By using data from industry stakeholders and conducting interviews with experts, their findings suggested that modernization of agricultural practices, improved quality control standards, and stronger trade agreements with key partners such as China and Europe could significantly enhance Myanmar's rice export performance.

Choudhury (2019), in his study Comparative Analysis of ECI Among Rice-Exporting Countries Over a Decade, aimed to compare the ECI of different rice-exporting countries over a 10-year period. This longitudinal analysis showed that countries like India and Thailand consistently maintained high ECI scores, indicating sustained competitiveness in the global rice market. In contrast, countries that struggled to adapt to changing market demands saw declining ECI scores, underscoring the importance of continuous improvement in production techniques and marketing strategies to maintain competitiveness.

Aigner et al. (2020) conducted a study titled Impact of Government Policies on Rice Export Competitiveness, with the objective of analyzing how government policies influence the ECI of rice-exporting countries. Using a mixed-method approach, the researchers combined quantitative analysis of policy impacts with case studies from several countries. Their findings highlighted that countries with supportive trade policies and significant investments in agricultural research and

development experienced notable improvements in their ECI, leading to increased rice export volumes and enhanced competitiveness.

Lastly, Nguyen and Pham (2021) examined the ECI of Vietnam, Thailand, and Myanmar in a comparative analysis titled Comparative ECI Analysis of Vietnam, Thailand, and Myanmar. Their objective was to assess the competitiveness of these three rice-exporting countries in the global market. The study revealed that Vietnam and Thailand had higher ECI scores due to technological advancements and market diversification, while Myanmar lagged behind due to its reliance on a limited number of markets and slower adoption of modern farming practices. This finding emphasized the need for Myanmar to diversify its export markets and adopt more advanced agricultural technologies to improve its competitiveness.

These studies collectively demonstrate the importance of policy reforms, technological innovation, and market diversification in enhancing the export competitiveness of rice-exporting countries. They underscore the need for continuous improvements in agricultural practices and government support to achieve better trade performance in the global rice market.

CHAPTER III
MYANMAR'S RICE EXPORT IN THE GLOBAL RICE MARKET

3.1 Overview of Myanmar's Rice Sector

Myanmar is a country with a long history in rice cultivation and production, spanning centuries. Rice is a key agricultural product in Myanmar, playing a crucial role in the agricultural economy. Particularly, the Irrawaddy Delta region is the main area for rice cultivation in the country. The natural water availability and irrigation systems in these regions have enabled successful agricultural activities.

Historically, Myanmar has been renowned for its significant rice production and export capacity. During the colonial period under British rule in the 19th century and prior to gaining independence, Myanmar was among the world's largest rice exporters. In the early 20th century, Myanmar stood out as a country with advanced rice export capabilities in the global market. However, due to political changes, conflicts, and economic sanctions, rice production and exports have declined since independence. The military coup in 1962 led to economic sanctions and reduced connections with the outside world. These conditions have resulted in significant challenges for both rice production and exportation.

Currently, Myanmar is striving to revive its rice production and trade, implementing plans to enhance its rice export sector. In the international rice market, Myanmar competes with countries like Thailand, Vietnam, and India. Thailand and Vietnam still have an advantage over Myanmar in rice production and exports due to their highly efficient agricultural systems and technology use. Despite being a major rice-producing country in Southeast Asia and East Asia, Myanmar faces challenges in terms of technological advancement, ineffective marketing systems, substandard rice quality, and management deficiencies, which hinder its competitiveness in the market. The government is actively working on economic policies and technological advancements to revitalize Myanmar's long-standing rice production and export sectors, adjusting to the changing dynamics in the international rice market.

3.1.1 Brief History of Rice Cultivation

Myanmar has a long history of rice cultivation, dating back over several centuries. The fertile river basins, particularly the Irrawaddy Delta, have traditionally supported rice as the dominant crop. Myanmar was a major rice exporter during the pre-colonial and colonial periods, and in the early 20th century, the country was among the largest exporters globally. However, political changes, wars, and economic isolation significantly impacted production and trade after independence.

Since its spread, rice has become a global staple crop important to food security and food cultures around the world. Local varieties of Oryza sativa have resulted in over 40,000 cultivars of various types. More recent changes in agricultural practices and breeding methods as part of the Green Revolution and other transfers of agricultural technologies has led to increased production in recent decades.

Many cultures have evidence of early rice cultivation, including China, India, and the civilizations of Southeast Asia. However, the earliest archaeological evidence comes from central and eastern China and dates to 7000–5000 BCE. More than 90 percent of the world's rice is grown in Asia, principally in China, India, Indonesia, and Bangladesh, with smaller amounts grown in Japan, world's rice is grown in Asia, principally in China, India, Indonesia, and Bangladesh, with smaller amounts grown in Japan, Pakistan, and various Southeast Asian nations. Rice is also cultivated in parts of Europe, in North and South America, and in Australia.With the exception of the type called upland rice, the plant is grown on submerged land in the coastal plains, tidal deltas, and river basinspical, and temperate regions.

The seeds are sown in prepared beds, and when the seedlings are 25 to 50 days old, they are transplanted to a field, or paddy, that has been enclosed by levees and submerged under 5 to 10 cm (2 to 4 inches) of water, remaining submerged during the growing season. In hilly areas rice farms are commonly terraced to keep the paddies flooded at various elevations. Successful rice production depends on adequate irrigation, including construction of dams and waterwheels, and on the quality of the soil. Long periods of sunshine are essential. Rice yields vary considerably, ranging from 700 to 4,000 kilograms per hectare (600 to 3,500 pounds per acre). Adequate irrigation, which means inundation of the fields to a depth of several inches during the greater part of the growing season, is a basic requirement for productive land use.

Today, rice is a staple food for more than half of the world's population, especially in Asia. Advances in agricultural practices and technology have

significantly increased rice production over the years. Rice has truly become a global crop, integral to food security and culture around the world

3.1.2 Importance of Myanmar's Rice Sector in the Economy

The rice sector holds a vital position in Myanmar's economy, significantly contributing to food security, rural livelihoods, and employment opportunities. Rice is a staple food for the majority of the population in Myanmar, making it essential for ensuring food security. A stable rice supply is critical not only for feeding the local population but also for maintaining overall nutritional standards. The reliance on rice as a primary food source emphasizes the need for sustainable production practices to secure future supplies. According to recent data, rice consumption accounts for about 66% of the daily calorie intake for the population. (FAO 2022)

A significant portion of Myanmar's rural population depends on rice farming as their primary source of income. Smallholder farmers, who are the backbone of the rice sector, cultivate rice on small plots of land. The sector provides not just a source of income but also a way of life for these families, supporting local economies and communities. Rice farming engages millions of people in various activities related to rice cultivation, processing, and marketing. From planting and harvesting to milling and distribution, the rice value chain creates diverse job opportunities, thereby reducing rural poverty and enhancing the overall quality of life for many families.

Myanmar's rice exports are a significant contributor to the country's export revenues. Historically, rice has been one of Myanmar's top export commodities. Despite fluctuations in its global market share, it remains a crucial source of foreign exchange. The sector's performance directly influences national economic stability and growth, underscoring its importance in trade relations with neighboring countries. In 2022, over 50% of rice exports from Myanmar were sent to China, and markets in the European Union have also opened up for duty-free imports from Myanmar.

The rice sector forms a substantial part of Myanmar's agricultural output, contributing significantly to the overall economic development of the country. The government has focused on agricultural reforms and improving rice production techniques to enhance productivity and competitiveness in the global market. This development is directly linked to the broader agricultural strategies and economic policies of Myanmar.

Despite its importance, the rice sector faces challenges, including low productivity, poor quality at the farm level, and outdated milling processes. Addressing these issues is essential for enhancing the sector's competitiveness. Investment in technology, infrastructure, and improved agricultural practices is necessary to boost productivity and quality, ensuring the sector's sustainability and growth. The rice sector is fundamental to Myanmar's economy, playing a crucial role in ensuring food security, providing livelihoods, and promoting sustainable development in rural areas. By highlighting its significance, we can foster discussions on potential solutions and the need for investment to strengthen this vital sector.

3.1.3 Major Milestones in Myanmar's Rice Trade

Before colonial rule, Myanmar's rice trade was primarily localized, with farmers engaging in small-scale exchanges within their communities. The country had a diverse range of rice varieties, which were cultivated mainly for subsistence. While there was some trade between regions, it was limited in scale and scope, as transportation and infrastructure were underdeveloped.

The British colonial period (1885-1948) marked a significant transformation in Myanmar's rice trade. Under British rule, Myanmar was integrated into the global economy, and the country emerged as one of the world's leading rice exporters. British investments in infrastructure, such as railroads and ports, facilitated the efficient transportation of rice to European and Asian markets. By the early 20th century, Myanmar was exporting millions of tons of rice annually, with major markets including Britain, India, and other Southeast Asian countries. This era solidified rice as a key export commodity, making significant contributions to the country's economy and the livelihoods of farmers.

Following independence in 1948, Myanmar's rice trade faced challenges due to internal policies and socio-economic changes. The socialist regime that took power in 1962 emphasized self-sufficiency and introduced restrictive agricultural policies. As a result, rice exports declined significantly, with the focus shifting towards domestic consumption and the centralization of agricultural production. This isolationist approach hampered Myanmar's ability to compete in the global rice market, and the country faced declining quality and productivity in its rice sector.

In recent years, particularly after 2011, Myanmar has implemented economic reforms aimed at liberalizing the economy and revitalizing the agricultural sector. The government has encouraged foreign investment, improved infrastructure, and adopted modern agricultural practices to enhance rice production and quality. These efforts have rekindled Myanmar's ambitions to regain its former stature in the global rice trade. As a result, rice exports have gradually increased, with major markets such as China, Thailand, and the European Union opening up for Myanmar's rice.

Today, Myanmar is working towards increasing its competitiveness in the global rice market. The government, along with local farmers and organizations, is focusing on improving rice varieties, enhancing post-harvest processing, and expanding access to international markets. The rice sector remains a crucial element of Myanmar's economy, contributing to food security, rural livelihoods, and national export revenues.

The journey of Myanmar's rice trade reflects the country's economic and political history. From regional exchanges in the pre-colonial era to becoming a leading exporter during the colonial period, and facing challenges post-independence, Myanmar's rice sector is now on the path to recovery. With continued reforms and investments, Myanmar aims to reclaim its position as a significant player in the global rice trade.

3.2 Myanmar's Position in the Global Rice Market

3.2.1 Overview of the Global Rice Market

The global rice market is highly competitive, with several key players dominating international trade. Rice is a staple food for more than half of the world's population, making it a critical commodity. International trade in rice is largely driven by production volumes, domestic consumption, and price fluctuations in major exporting countries.

Major exporters such as India, Thailand, Vietnam, and Pakistan dominate the market, supplying a large portion of the global demand. India is the largest exporter, leveraging its extensive production capacity and diverse varieties of rice. Thailand and Vietnam follow closely, known for their high-quality jasmine and fragrant rice. The competition among these nations drives prices and availability in the international market, affecting importing countries that depend on rice for food security.

In recent years, the rice market has experienced notable fluctuations due to factors such as climate change, changes in trade policies, and global economic conditions. These variables can lead to increased volatility in prices, affecting both exporters and importers. Additionally, shifts in consumer preferences and dietary trends have prompted exporters to diversify their rice products to cater to changing tastes and health considerations.

For Myanmar, understanding its position within this competitive landscape is crucial. While the country has significant potential for rice production due to its favorable climate and fertile land, it faces challenges such as outdated farming practices, infrastructure deficits, and competition from established exporters. By addressing these challenges and capitalizing on its unique varieties and geographic advantages, Myanmar can enhance its competitiveness in the global rice market.

The global rice market is not only vital for food security but also presents opportunities and challenges for exporting nations. As Myanmar seeks to strengthen its rice export sector, it must navigate the complexities of this competitive environment while leveraging its strengths to achieve sustainable growth in international trade.

3.2.2 Major Rice-Exporting Countries

The major rice-exporting countries include India, Thailand, and Vietnam, which collectively account for a significant portion of global rice exports. India stands out as the largest rice exporter, leveraging its vast production capabilities and a variety of rice types, particularly the renowned Basmati and other fragrant varieties. Following India, Thailand is well-known for its high-quality jasmine rice, which is highly sought after in international markets, while Vietnam also competes effectively with its diverse range of rice products.

Table (3.1)Major Rice-Exporting Countries

Country	Key Features	Export Volume (Million Ton)			Major Rice Varieties
		2010	2015	2020	
India	Largest exporter with diverse rice varieties	5.50	10.00	10.70	Basmati, Jasmine, Long-Grain
Thailand	Renowned for high-quality jasmine rice	9.70	10.60	6.20	Jasmine, Hom Mali
Vietnam	Competitive pricing with a wide range of products	6.90	6.40	6.10	Long-Grain, Japonica, Sticky Rice
Pakistan	Significant exporter known for Basmati rice	2.10	4.20	3.20	Basmati, IRRI, Non-Basmati varieties
Myanmar	Emerging player with potential for growth	0.20	0.50	1.30	Paddy, Local Varieties
United States	High-quality long-grain rice; specialized markets	3.50	3.70	3.40	Long-Grain, Medium-Grain, Sushi Rice
Egypt	Known for high-quality short-grain rice	0.60	0.70	0.50	Short-Grain, Egyptian Rice

Source : Food and Agriculture Organization (FAO 2020)

India's dominance in the global rice market is attributed to its extensive agricultural base and favorable climatic conditions that support large-scale rice cultivation. The country's ability to produce significant quantities of various rice types allows it to meet the diverse demands of importing nations.

Thailand has built a strong reputation for its premium quality jasmine rice, often considered the best in the world. This specialty has allowed Thailand to maintain a competitive edge in the international rice trade, appealing to consumers seeking high-quality rice products.

Vietnam, on the other hand, has emerged as a major player by capitalizing on its competitive pricing and increasing production capacity. The country offers a wide variety of rice products, including high-quality long-grain rice, making it a formidable competitor in the global market.

For Myanmar, the challenge lies in enhancing its position within this competitive landscape. While Myanmar has great potential due to its favorable climate and fertile land, it must address various challenges, such as outdated farming practices, infrastructure limitations, and competition from established exporters. By modernizing its agricultural practices and focusing on the unique qualities of its rice varieties, Myanmar can work towards improving its competitiveness in the global rice market.

While India, Thailand, and Vietnam dominate the global rice export market, Myanmar is striving to enhance its presence and competitiveness by overcoming challenges and leveraging its unique agricultural strengths.

3.2.3 Myanmar's Share in the Global Rice Market and Ranking Among Exporters

Myanmar has been gradually reclaiming its position in the global rice market, building upon its rich history as a major rice producer. Despite facing numerous challenges over the past decades, Myanmar has managed to reestablish itself among the top 10 rice-exporting countries. According to data from 2010 to 2020, Myanmar's rice exports have steadily increased, making it an emerging player in the global rice trade.

However, Myanmar’s share of the global rice market remains relatively small when compared to leading exporters such as India, Thailand, and Vietnam. While

these countries have maintained a dominant presence, Myanmar continues to improve its competitiveness through policy reforms, infrastructure development, and an emphasis on improving rice quality.

Myanmar's rice exports include production levels, which are highly dependent on seasonal weather conditions and agricultural practices. Export restrictions, both domestic and international, also play a significant role in shaping the country's rice trade. Furthermore, fluctuations in international demand, often driven by global economic conditions and the policies of importing countries, affect Myanmar's export performance.

Table(3.2) Myanmar's Export Ranking and Market Share (2010–2020)

Year	Myanmar's Export Volume (Million Tons)	Global Rank	Global Market Share (%)
2010	0.2	12	0.4
2015	0.5	9	1
2020	1.3	7	2.1

Source: FAOSTAT 2020

Myanmar's rice production is often affected by climate-related issues, such as flooding or drought, which can hinder both the quality and quantity of rice. Government policies, including restrictions on exports during times of domestic shortage, can limit Myanmar's ability to expand its presence in the global market.

Fluctuations in global rice demand and changes in trade policies by importing countries can affect Myanmar's export performance. For instance, Myanmar's rice may not always meet the specific quality standards or preferences of some international markets.

Despite these challenges, Myanmar's rice sector has significant growth potential. By continuing to invest in agricultural modernization, infrastructure, and improving rice varieties, Myanmar can increase its market share and rank among global rice exporters. Furthermore, diversifying its rice exports to cater to different markets could help stabilize demand and reduce reliance on specific buyers.

3.2.4 Key Importers of Myanmar Rice

Myanmar's rice exports primarily go to countries like China, ASEAN nations, and African countries. China is the largest importer of Myanmar rice, followed by

regional markets like the Philippines, Indonesia, and several African nations which rely on imported rice for food security.

Myanmar's rice exports primarily target a few key markets, with China being the largest importer of Myanmar rice. Over the years, Myanmar has built a strong trade relationship with China, thanks to their shared border, which facilitates overland trade. China imports significant quantities of rice to meet its domestic food security needs, especially in regions where rice production is insufficient.

Apart from China, Myanmar also exports rice to several ASEAN countries, including the Philippines and Indonesia, both of which have high rice consumption levels. These countries often rely on imports to supplement their domestic production, especially during years of poor harvest or when demand exceeds local supply.

African countries are also important destinations for Myanmar's rice exports. Nations such as Côte d'Ivoire, Senegal, and Nigeria regularly import rice from Myanmar to address food security concerns. Many African countries have rising populations and insufficient domestic rice production, making them reliant on imports to meet their growing demand.

Myanmar's ability to expand its rice exports to these regions depends on competitive pricing, product quality, and meeting the specific requirements of importing countries, such as phytosanitary standards.

Table (3.3) Key Importers of Myanmar Rice (2010–2020)

Country/Region	Myanmar's Export Volume (Million Tons, 2020)	Market Share (%)
China	0.6	46
Philippines	0.2	15
Indonesia	0.1	8
African Nations	0.3	23
Others	0.1	8

Soure: Myanmar Rice Federation (MRF 2020)

As Myanmar's largest rice importer, China plays a critical role in shaping the country's export policies. Myanmar primarily exports low- to medium-grade rice to China, often through cross-border trade. However, strict import regulations and periodic trade restrictions from China can affect export volumes.

Countries like the Philippines and Indonesia depend on rice imports to maintain food security, especially in years of low production. Myanmar benefits from geographic proximity to these markets, which helps reduce transportation costs.

Africa represents a growing market for Myanmar's rice exports. Myanmar's rice is competitively priced, which appeals to countries in West and Central Africa. However, these markets are also highly competitive, with other major rice exporters like Thailand, Vietnam, and India vying for market share.

Importers from these regions are highly sensitive to rice prices, and Myanmar often competes on cost-effectiveness. Offering competitive pricing while maintaining quality is key to sustaining and expanding exports.

To strengthen its position, Myanmar can focus on improving rice quality, ensuring consistency in supply, and building stronger trade partnerships with these key importers. Diversifying its rice varieties and adhering to international standards will help Myanmar maintain and potentially increase its export volumes. Additionally, expanding market access to more African countries and enhancing trade relationships with ASEAN nations could offer further growth opportunities.

3.3 Factors Influencing Myanmar's Rice Exports

3.3.1 Agricultural Practices and Technology

Myanmar's rice production remains largely dependent on traditional farming methods, with limited adoption of mechanization and modern agricultural technologies. Most rice farmers in Myanmar still rely on manual labor for land preparation, planting, and harvesting, which restricts productivity. Irrigation systems in many areas are underdeveloped, and farmers often depend on rainfall, leading to variability in yields from season to season. Additionally, the use of fertilizers and pesticides is inconsistent, partly due to cost constraints and lack of awareness among smallholder farmers.

A significant portion of Myanmar's rice is produced by small-scale farmers with limited access to capital and resources, making it difficult to implement large-scale technological upgrades. This reliance on traditional farming techniques results in lower yields compared to neighboring countries like Thailand and Vietnam, where more modern and efficient farming practices are in place.

In recent years, there have been efforts to introduce modern farming technologies to improve rice yields and the overall efficiency of production. For example, initiatives have been launched to provide farmers with access to improved seed varieties that are more resistant to pests, diseases, and environmental stress. These improved seed varieties can potentially increase yields and enhance the quality of the rice produced.

However, Myanmar's rice sector still faces significant challenges in adopting modern technology on a wide scale. The primary barriers include:

Farmers often lack the financial resources necessary to invest in modern farming equipment, such as tractors, harvesters, and irrigation systems. Smallholder farmers are particularly affected, as they do not have the economies of scale to justify these investments.

Poor infrastructure, such as inadequate rural roads and limited access to electricity in many farming regions, further hampers the adoption of mechanized farming. Additionally, the limited availability of storage and processing facilities contributes to post-harvest losses, reducing the overall quality and quantity of rice available for export.

There is also a knowledge gap among farmers when it comes to using advanced farming techniques and technologies. Extension services, which could provide training and support to farmers, are underdeveloped in many parts of the country.

While the government has taken steps to improve agricultural productivity, the level of public and private investment in agriculture remains insufficient. More consistent policies, along with better access to finance for farmers, could accelerate the adoption of modern technologies.

Increasing access to mechanized tools and improving irrigation infrastructure would greatly enhance productivity. Investments in these areas would allow farmers to cultivate rice more efficiently and with higher yields.

Continued research into improved rice varieties, along with better dissemination of these varieties to farmers, can help boost yields and make Myanmar's rice more competitive internationally.

Providing more training and resources to farmers through extension programs and agricultural cooperatives can help close the knowledge gap and enable them to adopt modern practices.

While Myanmar has made some progress in improving rice production, widespread challenges in agricultural practices and access to technology continue to limit its potential. Addressing these issues is crucial for increasing both the quality and quantity of rice exports and enhancing Myanmar's competitiveness in the global rice market.

3.3.2 Market Access and Infrastructure

Myanmar's transportation infrastructure, especially in rural areas where much of the rice is grown, remains underdeveloped, which presents significant challenges for the rice export sector. Poor road conditions, limited rail networks, and a lack of reliable transportation systems in these regions make it difficult for farmers to transport rice to processing centers, storage facilities, or export terminals. This often leads to delays, higher transportation costs, and, in some cases, spoilage of rice during transit.

Additionally, Myanmar's ports, which play a critical role in facilitating international trade, lack the advanced logistics and handling facilities necessary to efficiently manage large volumes of rice exports. Limited port infrastructure can result in delays in shipping, reducing Myanmar's competitiveness in the global market. The lack of cold chain logistics and modern shipping technology further hampers the ability to ensure that rice reaches international markets in optimal condition.

Improving transportation infrastructure, particularly in rural regions, is essential for reducing costs, improving market access, and ensuring that rice is delivered in a timely manner to both domestic and international markets.

Another significant challenge affecting Myanmar's rice exports is the inadequate availability of modern storage facilities. A large portion of harvested rice is stored in makeshift or traditional storage units that lack proper climate control and protection from pests. As a result, post-harvest losses due to spoilage, pest infestation, and exposure to moisture are common, leading to a reduction in the overall quantity and quality of rice available for export.

Poor storage conditions also degrade the quality of rice, making it less competitive in international markets, where buyers demand consistent quality standards. This affects Myanmar's ability to fetch higher prices or secure long-term contracts with key importers. Furthermore, the lack of proper drying, milling, and

packaging facilities exacerbates these issues, as rice must meet strict international standards regarding moisture content, cleanliness, and packaging before being exported.

Investments in road and rail infrastructure, particularly in rural areas, could help reduce transit times and lower transportation costs. Improved access to ports and better logistics infrastructure, such as modern shipping and handling facilities, would enable Myanmar to compete more effectively in the global rice market.

Establishing more modern, climate-controlled storage facilities and upgrading milling equipment would help preserve the quality of rice and minimize post-harvest losses. This could significantly enhance the competitiveness of Myanmar's rice exports by ensuring that the rice meets international standards.

Myanmar's rice export potential is hampered by underdeveloped transportation infrastructure and inadequate storage facilities. Addressing these issues through investment in logistics and modern storage technology is crucial to improving the quality and competitiveness of Myanmar's rice on the global market.

3.3.3 Government Policies and Support

The Myanmar government has undertaken several initiatives aimed at supporting and improving the rice sector, recognizing its importance to both the economy and rural livelihoods.

To boost rice production, the government provides subsidies for essential inputs such as seeds, fertilizers, and irrigation. These subsidies aim to reduce the cost burden on small-scale farmers, allowing them to increase production and improve rice quality. However, access to these subsidies is often uneven, with farmers in more remote areas facing difficulties in obtaining them.

The government has initiated various training programs to educate farmers on modern farming techniques, pest control, and efficient water usage. These programs, often conducted in partnership with international organizations, aim to improve yields, enhance rice quality, and promote sustainable agricultural practices. Despite these efforts, the reach of such programs remains limited, particularly in rural and underdeveloped regions.

In addition to training, the government encourages the adoption of improved farming practices, such as the use of high-yield and pest-resistant rice varieties. Through collaboration with research institutes, new seed varieties are being

introduced to help farmers cope with changing climate conditions and pest threats, ultimately improving production output.

While these initiatives have had positive impacts on rice production, challenges remain. Limited government funding, bureaucratic inefficiencies, and inconsistent policy implementation hinder the full realization of these programs. Moreover, many farmers continue to rely on traditional methods due to the lack of access to new technologies and the necessary infrastructure to support their adoption.

Myanmar has entered into trade agreements with neighboring countries, particularly within the ASEAN framework. These agreements provide preferential market access, reduce tariffs, and create opportunities for Myanmar's rice exports to reach countries like the Philippines, Indonesia, and Malaysia. Additionally, bilateral agreements with China facilitate the cross-border rice trade, making China Myanmar's largest rice importer.

Through cooperation with international organizations like the World Trade Organization (WTO) and the Food and Agriculture Organization (FAO), Myanmar seeks to align its agricultural policies with global standards, ensuring that its rice products meet the quality and safety requirements of various importing countries. These collaborations also provide technical assistance and financial support for infrastructure development in the rice sector.

However, Myanmar continues to face significant challenges in expanding its export markets due to trade barriers and tariffs imposed by some countries. In certain markets, including European and African nations, Myanmar's rice exports face tariffs and quotas, limiting its competitiveness compared to major exporters like India and Vietnam.

Stringent quality and safety standards in international markets, including phytosanitary measures and certification requirements, are difficult for Myanmar to meet consistently. The lack of adequate processing and packaging facilities exacerbates these challenges.

Enhancing government support for rice farmers by simplifying subsidy access and expanding infrastructure development in rural areas would significantly improve production efficiency. Additionally, expanding training programs and ensuring their accessibility across all farming regions is critical for the widespread adoption of modern farming techniques.

Myanmar could benefit from negotiating more favorable trade terms with key partners and diversifying its export markets. By reducing reliance on a few major markets, the country could better insulate itself from market fluctuations and trade restrictions.

Myanmar's government has made strides in supporting the rice sector through subsidies, training, and trade agreements, there is room for improvement in policy implementation and infrastructure development. Overcoming these barriers is essential to maximizing Myanmar's export potential and ensuring its competitiveness in the global rice market.

3.4 Challenges Facing Myanmar's Rice Export Sector

3.4.1 Internal Challenges

. Myanmar's rice production is highly vulnerable to natural disasters, which pose significant internal challenges to its export sector. The country frequently experiences floods, droughts, and cyclones, all of which directly impact rice yields and overall production. These events are becoming more severe due to climate change, further destabilizing Myanmar's agricultural output.

During the monsoon season, excessive rainfall can lead to widespread flooding in low-lying rice-growing regions. This not only damages standing crops but also affects soil fertility, reducing future yields. Flooding disrupts the planting and harvesting seasons, leading to lower production volumes.

Conversely, droughts during the dry season can severely limit water availability for rice cultivation, particularly in regions without proper irrigation systems. As rice is a water-intensive crop, drought conditions can drastically reduce yields and threaten food security.

The effects of climate change, such as rising temperatures, unpredictable rainfall patterns, and increased frequency of extreme weather events, further compound these challenges. Prolonged exposure to such conditions can affect the quality of rice, making it harder for Myanmar's exports to compete in international markets.

As a result, Myanmar's rice export volumes fluctuate depending on the severity of these natural disasters. Such unpredictability makes it difficult for the

country to maintain a steady supply of rice for export, limiting its ability to meet international demand consistently.

Another major internal challenge for Myanmar's rice export sector is its difficulty in meeting international quality standards and obtaining the necessary certifications to access premium markets. Key issues include:

Myanmar's rice often struggles to meet the stringent quality requirements of international buyers, particularly in high-income markets such as the European Union or Japan. Factors such as inconsistent grain quality, poor post-harvest handling, and inadequate processing facilities contribute to this problem. Without sufficient quality control measures, Myanmar's rice is frequently relegated to lower-value markets, where standards are less strict.

Many of Myanmar's rice mills are outdated and unable to process rice to the specifications demanded by international buyers. The lack of proper drying, milling, and packaging facilities results in subpar rice quality that does not meet the premium market criteria.

Meeting international certification requirements, such as Good Agricultural Practices (GAP) and food safety standards, is challenging for many small-scale farmers and exporters. These certifications are necessary for accessing higher-value markets, but the certification process can be costly and complex, particularly for smallholders who lack the resources to invest in meeting these standards.

Increasingly, international buyers require traceability systems to ensure that rice meets health and safety standards, such as being free from pesticide residues and contaminants. Myanmar's current agricultural practices and infrastructure make it difficult to implement comprehensive traceability systems, further hindering the country's ability to access premium markets.

To mitigate the impact of natural disasters and climate change, Myanmar could invest in climate-resilient agricultural practices, such as developing drought-resistant rice varieties and improving irrigation infrastructure.

Modernizing rice milling and processing facilities would significantly enhance the quality of rice produced, enabling Myanmar to meet international standards and access premium markets.

Expanding training programs that help farmers and exporters achieve certification for international markets would increase Myanmar's competitiveness.

Government support and collaboration with international organizations could facilitate this process, particularly for small-scale producers.

Myanmar's rice export sector faces significant internal challenges from natural disasters, climate change, and difficulties in meeting international quality standards. Addressing these issues through infrastructure investment, better agricultural practices, and improved certification processes is key to boosting Myanmar's competitiveness in the global rice market.

3.4.2 External Challenges

Myanmar's rice export sector faces intense competition from well-established global rice exporters, particularly India, Thailand, and Vietnam. These countries not only have greater export volumes but also benefit from more developed infrastructure, efficient supply chains, and stronger market access.

As the world's largest rice exporter, India has a dominant presence in key markets, offering both lower-priced varieties and premium rice products. India's large production capacity allows it to meet global demand consistently, often at more competitive prices than Myanmar can offer.

These Southeast Asian nations are known for their high-quality rice and have carved out strong positions in premium markets, thanks to their advanced agricultural practices, modern milling facilities, and strategic government support for exports. Thailand, for example, is a leader in exporting jasmine rice, a variety with significant global demand, while Vietnam has gained a strong foothold in both Asian and African markets. Myanmar, by comparison, struggles to match their production efficiency, quality, and market access, making it harder to compete in the global market.

As a result, Myanmar's rice is often priced lower to compete with these larger exporters, which impacts profitability and market positioning. The country's smaller production volumes and less-developed infrastructure further hinder its ability to challenge these established exporters on a large scale.

Changes in global rice production, driven by weather conditions, crop yields, and policy shifts in major exporting and importing countries, can cause significant price swings. A surplus in the global market can lead to price drops, making it harder for Myanmar to compete profitably, while shortages in key markets may increase demand but also strain Myanmar's ability to meet that demand consistently.

Trade disputes, embargoes, or political instability in key importing regions can disrupt Myanmar's access to important markets. For instance, shifts in trade policies between China and other major rice exporters could either open up or close off opportunities for Myanmar, depending on the geopolitical landscape.

Shifts in consumer demand, such as a growing preference for high-quality or specialty rice varieties, may also affect Myanmar's market position. If importing countries favor premium rice from competitors like Thailand or India, Myanmar may face reduced demand for its lower-priced or lower-quality rice.

Exchange rate fluctuations can also affect Myanmar's competitiveness, as changes in currency values can impact export pricing and profitability. A strong kyat (Myanmar's currency) may reduce the competitiveness of Myanmar's rice in international markets, while a weaker kyat could improve it, depending on global conditions.

Myanmar encounters various trade barriers and restrictions that limit its access to important global markets, including:

(a)Import Quotas and Tariffs

Some importing countries impose quotas on rice imports or tariffs that increase the cost of Myanmar's rice, making it less competitive. For example, Myanmar's rice exports to the European Union face high tariffs compared to those from least-developed countries (LDCs), reducing its access to this lucrative market. Similar barriers exist in other potential markets, such as African and Middle Eastern countries, where local regulations or preferences for other exporters create additional obstacles.

(b) Non-Tariff Barriers

Myanmar's rice also faces non-tariff barriers, such as stringent sanitary and phytosanitary (SPS) requirements in countries like Japan and the EU. Meeting these high standards for food safety, pest control, and product traceability requires significant investments in infrastructure and compliance, which are difficult for Myanmar to achieve at scale.

(c) Trade Restrictions

Certain markets impose temporary restrictions or embargoes on rice imports for political or economic reasons, reducing Myanmar's ability to export to those regions. This is particularly relevant in regions experiencing economic instability,

where import restrictions may be imposed to protect domestic production or balance trade deficits.

Myanmar can mitigate the effects of international competition and market fluctuations by diversifying its export markets. Exploring new regions, such as the Middle East or Latin America, may reduce dependency on a few major buyers and improve the overall stability of Myanmar's rice exports.

Negotiating more favorable trade agreements, reducing tariffs, and addressing non-tariff barriers through diplomatic efforts would help Myanmar gain better access to key markets and reduce the impact of trade restrictions.

Myanmar's rice export sector faces external challenges from strong international competition, global market volatility, and trade barriers. Overcoming these challenges will require strategic efforts to diversify markets, enhance rice quality, and improve trade relations to ensure that Myanmar remains competitive in the global rice market.

3.5 Opportunities for Growth in Myanmar's Rice Export Sector

3.5.1 Emerging Markets and New Trading Partners

There are opportunities to explore new markets in Africa, the Middle East, and Europe. Expanding into these regions could help diversify Myanmar's export portfolio and reduce reliance on existing markets like China.

Myanmar's rice export sector has significant opportunities for growth through the exploration of emerging markets and the development of new trading partnerships. Expanding into untapped regions could diversify Myanmar's export portfolio, reducing the risks associated with reliance on a few dominant markets, such as China.

The African continent represents a promising opportunity for Myanmar's rice exports. Many African nations, particularly in West and East Africa, have growing populations and rely heavily on imported rice to meet food security needs. Countries such as Nigeria, Côte d'Ivoire, and Senegal have become significant importers of rice due to insufficient domestic production.

Africa's demand for rice is projected to grow in the coming years, driven by population growth, urbanization, and changing dietary preferences. Myanmar's ability to supply competitively priced rice makes it well-positioned to increase its market share in Africa. Myanmar already exports rice to several African countries, but there is considerable room for expansion. Building stronger trade relationships with these

nations and improving logistical channels would allow Myanmar to compete more effectively with other major exporters like Thailand and Vietnam, which already have a foothold in the African market.

The Middle East is another potential growth market for Myanmar's rice exports. Countries in this region, such as Saudi Arabia, the United Arab Emirates, and Iraq, are major importers of rice due to limited domestic production and a reliance on imports to feed their populations. Myanmar's geographic proximity to the Middle East offers logistical advantages over distant exporters, allowing for potentially lower shipping costs and faster delivery times. Capitalizing on this geographical advantage, Myanmar could strengthen its position as a key supplier to the region. The Middle East has a high demand for various rice varieties, particularly basmati and long-grain rice. While Myanmar may face competition from established exporters like India and Pakistan, it can capture market share by offering competitively priced alternatives that meet local preferences and quality standards.

Although the European market has strict quality and safety standards, it presents an opportunity for Myanmar's rice exports, especially in countries with growing immigrant populations that consume rice as a staple food. European markets could provide Myanmar with access to niche segments, particularly organic or specialty rice varieties, which fetch higher prices. If Myanmar improves its quality control measures and secures international certifications, it could enter high-value European markets. Certain European countries, such as the United Kingdom, France, and Germany, have sizable immigrant communities from rice-consuming regions like South Asia and Africa. These communities represent a growing demand for affordable rice imports, and Myanmar could tap into this market by positioning itself as a competitive supplier.

Currently, a significant portion of Myanmar's rice exports go to China and ASEAN nations, which exposes the country to risks related to market concentration. Political or economic disruptions in these regions could negatively impact Myanmar's export revenue. Expanding into multiple markets would mitigate the risks associated with reliance on a few large buyers. It would also provide greater stability in export volumes and revenue by spreading demand across various regions. Diversifying the export portfolio would make Myanmar's rice sector more resilient to global market fluctuations, trade barriers, or changes in demand from existing markets.

Myanmar can benefit from negotiating bilateral trade agreements with countries in these emerging regions to reduce tariffs and improve access to new markets. Establishing favorable trade terms with African and Middle Eastern nations, in particular, would increase Myanmar's competitive edge. To attract new buyers, Myanmar's rice exporters could focus on marketing their products more effectively in emerging markets. Developing branding strategies that emphasize quality, affordability, and consistency could help Myanmar stand out among competitors in these regions. Expanding into emerging markets in Africa, the Middle East, and Europe offers Myanmar's rice export sector significant opportunities for growth. By diversifying its trading partners, Myanmar can reduce its reliance on existing markets and enhance its competitiveness in the global rice market.

Table(3.4) Emerging Markets and New Trading Partners

Region	Potential Countries	Key Opportunities	Challenges
Africa	Nigeria, Côte d'Ivoire, Senegal, Ghana	Rising demand due to population growth	Competition from Thailand and Vietnam
		Strong reliance on rice imports	Trade barriers in some African nations
		Myanmar's competitive pricing	
Middle East	Saudi Arabia, UAE, Iraq, Yemen	High demand for rice imports	Competing with India and Pakistan for market share
		Geographical proximity to Myanmar	Need to meet quality preferences
		Potential for long-term trade relations	
Europe	United Kingdom, France, Germany	Growing demand from ethnic communities	Stringent quality and safety standards
		Niche markets for organic and specialty rice varieties	Certification requirements

Source: United Nations Commodity Trade Statistics Database(2020)

3.5.2 Expanding into Higher-Value Rice Varieties

Myanmar has significant opportunities to expand its rice export sector by tapping into the growing demand for higher-value rice varieties, including organic**,** specialty**,** and aromatic rice**.** These products can command premium prices in niche international markets, enhancing the profitability of Myanmar's rice exports. With increasing health consciousness among consumers globally, there is a growing preference for organic rice. This trend is particularly prominent in developed markets, where consumers are willing to pay a premium for products perceived as healthier and environmentally friendly.

Specialty rice varieties, such as glutinous rice**,** black rice, and red rice**,** are gaining popularity due to their unique flavors, nutritional benefits, and culinary uses. These varieties cater to specific dietary preferences and are sought after by consumers looking for diverse food options. Varieties like jasmine and basmati rice are highly valued for their fragrance and flavor. The demand for aromatic rice is particularly strong in regions with significant rice consumption, such as the Middle East, where it is often used in traditional dishes. Myanmar can leverage its production capabilities to grow and export aromatic rice, competing with established producers like Thailand and India.

By shifting focus from traditional, lower-value rice varieties to higher-value options, Myanmar can improve its profit margins. Higher-value rice varieties often yield better prices in international markets, allowing exporters to generate greater revenue per ton. Expanding into higher-value rice varieties helps diversify Myanmar’s export portfolio. This reduces dependence on staple rice varieties and allows exporters to enter niche markets with specific consumer demands, making the export sector more resilient to market fluctuations.

Many developed countries have a high demand for organic and specialty rice. By producing and exporting these varieties, Myanmar can tap into premium markets that offer substantial profit potential. This could also enhance the country’s reputation as a supplier of quality rice. Meeting international organic standards and obtaining the necessary certifications can be resource-intensive. Farmers and exporters need to invest in training and resources to ensure compliance with these standards. To successfully cultivate higher-value rice varieties, Myanmar may need to adopt modern

agricultural practices and technologies. This includes improved irrigation systems, pest management, and post-harvest processing to enhance quality and yield.

Understanding market demands, consumer preferences, and pricing dynamics for higher-value rice varieties is crucial. Myanmar's exporters should invest in market research to identify opportunities and tailor their offerings to meet specific buyer requirements. By expanding into higher-value rice varieties such as organic, specialty, and aromatic rice, Myanmar can significantly enhance its competitiveness in the global rice market. This strategic shift not only promises better profit margins but also positions Myanmar as a reliable supplier of quality rice in niche international markets. With targeted investments and a focus on compliance and technology, Myanmar can capitalize on this growing demand, ultimately benefiting its rice export sector and the broader agricultural economy.

3.5.3 Role of International Investment and Foreign Aid

International investment and foreign aid can play a significant role in improving Myanmar’s rice sector, particularly in areas such as infrastructure development, technological advancement, and capacity building for farmers. Foreign partnerships can also help improve market access and enhance competitiveness in global trade.

Foreign investment can help improve transportation infrastructure, such as roads, ports, and storage facilities. Enhancing logistics will ensure that rice is delivered efficiently to both domestic and international markets, reducing post-harvest losses and improving market competitiveness. Investment in modern irrigation systems can help farmers increase rice yields and reduce dependency on erratic rainfall. Improved irrigation infrastructure ensures consistent water supply, which is vital for rice cultivation, particularly in the face of climate change.

Upgrading storage facilities through foreign aid can minimize post-harvest losses due to spoilage or pest infestations. Adequate storage allows farmers to hold their produce until market prices are favorable, thereby maximizing profit margins. International investment can facilitate the transfer of technology and expertise in modern agricultural practices. This includes better seed varieties, mechanization, and precision farming techniques, which can significantly boost productivity and sustainability in rice farming.

Collaborations with foreign institutions can enhance research and development efforts aimed at improving rice varieties and farming practices. Investment in agricultural research can lead to innovations that increase yield, disease resistance, and adaptability to changing climate conditions. The adoption of digital technologies, such as mobile applications for market information, weather forecasts, and agricultural advice, can empower farmers with the knowledge they need to make informed decisions. International investment can support the development and dissemination of these technologies.

Foreign aid can fund training programs to educate farmers about modern agricultural techniques, sustainable practices, and quality control measures. This capacity-building effort can help farmers improve their production methods and meet international quality standards, making their products more competitive in global markets. International investment can enhance access to financial services, such as microloans and insurance products for farmers. Improved financial services will enable farmers to invest in better inputs and technology, ultimately increasing productivity and profitability.

Establishing partnerships with foreign companies can help Myanmar's rice exporters gain access to new markets and distribution networks. These collaborations can enhance competitiveness by leveraging the experience and resources of established international players. International investment can enable Myanmar's rice sector to integrate into global value chains. By collaborating with multinational corporations and exporters, Myanmar can improve its processing capabilities and quality standards, thereby increasing its presence in premium markets. International investment and foreign aid are critical for the growth and modernization of Myanmar's rice export sector. By focusing on infrastructure development, technological advancement, and capacity building for farmers, these resources can significantly enhance productivity and competitiveness. Furthermore, foreign partnerships can open new market opportunities, helping Myanmar to strengthen its position in the global rice market. Leveraging international support will be essential for the sustainable development of Myanmar's rice industry, ultimately contributing to the country's economic growth and food securit

CHAPTER IV
DATA ANALYSIS

4.1 Export Competitiveness Index (ECI) for Myanmar

In order to evaluate Myanmar's rice exports in the context of the global market, Export Competitiveness Index (ECI) is conducted in this study. ECI is used to measure Myanmar's share of the global rice market and to compare it with other major rice-exporting countries. ECI is a quantitative measure and it can be calculated as follow:

Country's Export Share in the World Market (CES)

$$CES = \frac{\text{Country's Export of Product}}{\text{Total World Export of Product}}$$

World Export Share of the Product (WES)

$$WES = \frac{\text{Total World Export of Product}}{\text{Total World Export of All Products}}$$

The Export Competitiveness Index (ECI)

$$ECI = \frac{\text{Country's Export Share in World Market}}{\text{World's Export Share}}$$

If ECI > 1, the country has a competitive advantage in exporting the product. If ECI < 1, the country is not competitive in exporting the product compared to the global average. If ECI = 1, the country's export performance is average, relative to the global market. A higher ECI value indicates better competitiveness in a specific year, while lower values suggest a decline in competitiveness. To calculate ECI for Myanmar, rice export and total export for both Myanmar and World, data from 2010 to 2022, are available from websites of United States Department of Agriculture (USDA) and World Integrated Trade Solution (WITS).

Table 4.1 The Export Competitiveness Index of Myanmar (2020-2022)

Year	MM Rice Export (‘000 $)	World Rice Export (‘000 $)	World Total Export (‘000,000$)	CES	WES	ECI
2010	22106	2,221,976.38	1,006,833.56	0.0099	0.00221	4.51*
2011	33948.5	4,624,463.41	1,152,164.72	0.0073	0.00401	1.83*
2012	42854.06	10,222,288.10	1,263,452.64	0.0042	0.00809	0.52
2013	36727.54	10,451,666.27	1,247,094.20	0.0035	0.00838	0.42
2014	53307.04	11,556,670.68	1,403,857.32	0.0046	0.00823	0.56
2015	54791.3	11,016,136.03	1,358,761.08	0.0050	0.00810	0.61
2016	41054	10,034,796.38	1,280,032.14	0.0041	0.00784	0.52
2017	105793	12,539,007.64	1,538,640.76	0.0084	0.00815	1.04*
2018	86845	11,759,121.85	1,523,924.48	0.0074	0.00772	0.96
2019	85266	9,786,469.57	1,387,088.34	0.0087	0.00705	1.23*
2020	72634	14,537,589.62	1,432,753.02	0.0050	0.01015	0.49
2021	60002	21,182,575.54	1,647,781.24	0.0028	0.01286	0.22
2022	73739.3	22,062,190.96	1,771,638.00	0.0033	0.01245	0.27

Source: wits.worldbank.org,(2022)

Table 4.1 shows the ECI value of Myanmar from 2010 to 2022. The years with ECI values marked with asterisk (4.51, 1.83, 1.04, 1.23) suggest that Myanmar had a relatively strong export performance and was more competitive in these years. The yearly ECI values show considerable fluctuations, which means that Myanmar’s export competitiveness has hot been consistent over the years. There is significant drop from 4.51 in 2010 to 0.52 in 2012. Some recovery in later years with 104 in 2017 and 1.23 in 2019, followed by lower values 0.49 in 2020, 0.22 in 2021 and 0.27 in 2022.

The more recent values 0.49, 0.22 and 0.27 suggest a drop in export competitiveness, indicating that Myanmar’s exports have become less competitive globally in the most recent years. These variations could be due to several factors affecting Myanmar’s export performance, such as changes in global demand, trade policies, domestic economic conditions or competition from other countries.

4.2 Comparative Analysis with Selected ASEAN Countries

Myanmar was once the largest rice exporter in the world in the early 20th century. While it no longer holds that position, it has re-emerged as an important rice exporter, especially after opening up its economy in the 2010s. By comparing its performance with established exporters like Thailand and Vietnam, the analysis can identify strengths and weaknesses in Myanmar's rice sector. Understanding how these countries have succeeded in maintaining their competitive edge provides valuable insights for Myanmar to enhance its market positioning (World Bank, 2020).

In the ASEAN region, several countries are major rice exporters, with each having a significant role in the global rice market. Thailand has long been one of the world's top rice exporters. Known for its premium-quality rice, the country has been a leader in the rice export market for decades. Vietnam is another leading rice exporter and a strong competitor to Thailand. It exports large quantities of rice annually, particularly to markets in Asia and Africa. The Mekong Delta is the primary rice-producing region in Vietnam. Cambodia has been increasing its rice exports in recent years, particularly focusing on premium rice varieties. The country is gaining a reputation for its quality rice, especially in European and Chinese markets.These countries play an essential role in the global rice trade, with Thailand and Vietnam being the most dominant players in the ASEAN region. Rice is a staple crop for much of Southeast Asia, and its export plays a significant role in the region's economies.

According to Table 4.1, Myanmar’s ECIs have been seen a significant drop from 4.508 in 2010 to 0.419 in 2013. This indicates that Myanmar lost substantial competitiveness over this period, possibly due to internal reforms or changes in global market conditions. Since the ECI reflects the performance and competitiveness of a country’s rice exports in the global market, Table 4.2 is constructed to analyze Myanmar's Export Competitiveness Index (ECI) in comparison with Vietnam, Cambodia, and Thailand, it's essential to observe trends over the years from 2010 to 2022.

Table 4.2 The Export Competitiveness Index of Selected ASEAN Countries (2020-2022)

Year	Myanmar	Vietnam	Cambodia	Thailand
2010	4.508	43.367	4.830	58.263
2011	1.829	11.910	1.463	18.115
2012	0.518	2.947	0.344	2.652
2013	0.419	2.416	0.388	2.423
2014	0.560	2.100	0.332	3.641
2015	0.613	2.336	0.407	3.458
2016	0.522	2.043	0.422	3.971
2017	1.035	2.005	0.355	3.603
2018	0.957	2.294	0.452	3.903
2019	1.235	3.010	0.617	3.460
2020	0.492	1.320	0.289	1.224
2021	0.220	0.727	0.215	0.729
2022	0.268	0.811	0.195	0.883

Source: wits.worldbank.org,(2022)

As in Table 4.2, it can be seen that Vietnam consistently outperformed Myanmar in rice export competitiveness. Although Vietnam’s ECI declined from 43.367 in 2010 to 0.811 in 2022, it remained much higher than Myanmar throughout the entire period. Vietnam’s strong infrastructure, export networks, and efficient farming practices allowed it to maintain a strong presence in the global rice market despite some declines.

Cambodia’s ECI values are closer to Myanmar's, especially between 2012 and 2022. Both countries faced similar challenges in maintaining competitiveness, though Cambodia remained marginally more competitive than Myanmar. Cambodia's ECI fluctuated but remained relatively low overall.

Thailand had the highest ECI among the four countries, starting from 58.263 in 2010, indicating its dominant position in global rice exports. Despite a gradual decline to 0.883 by 2022, Thailand’s ability to sustain high competitiveness for most of the period can be attributed to its well-established rice industry and export capacity.

This comparative analysis reveals that Myanmar has faced significant challenges in maintaining its competitiveness in rice exports over the years, while Vietnam and Thailand have been able to maintain a stronger presence, with varying degrees of success.

CHAPTER V

CONCLUSION

5.1 Findings

This study provides a comprehensive analysis of Myanmar's rice export performance in the context of the global rice market. Key findings indicate that while Myanmar possesses a strong potential for rice production due to its favorable agricultural conditions and rich biodiversity, the country faces significant challenges in enhancing its export capabilities.

Myanmar’s ECI values fluctuated between 0.560 and 1.235 from 2014 to 2019, showing improvements in some years (notably 2017 and 2019), but not reaching its peak competitiveness seen in 2010. The variation could be influenced by regional competition, export policies, or yield variability. Further Decline (2020–2022): From 2020 onwards, Myanmar’s competitiveness dropped again, reaching 0.220 in 2021, and stabilizing slightly at 0.268 in 2022. This decline might relate to global supply chain disruptions, the impact of COVID-19, or internal economic challenges.

The Export Competitiveness Index (ECI) values for Myanmar illustrate fluctuations over the years, reflecting inconsistencies in market performance compared to other ASEAN nations like Vietnam and Thailand, which have more established export frameworks. The findings suggest that Myanmar's rice exports are hampered by several factors, including inadequate infrastructure, limited access to modern agricultural technologies, and heightened competition from neighboring countries. Furthermore, the lack of robust marketing strategies and insufficient government support for farmers contribute to the challenges faced in reaching international markets effectively.

5.2 Suggestions

In order to improve its position in the global rice market, it could provide several suggestions. First, adoption of modern agricultural practices and technologies should be encouraged because they could increase yield and improve rice quality. This includes training programs for farmers on sustainable farming methods and access to high-quality seeds. Second, new markets should be explored beyond traditional ones, focusing on regions with growing demand for rice, particularly in Africa and the Middle East. Policies should be implemented, providing financial and technical support to rice farmers, enabling them to compete effectively in the global market. Besides, it is essential to foster partnerships with ASEAN member states to share best practices, engage in joint marketing efforts, and enhance regional trade relations.

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WEBSITES

https://comtrade.un.org

https://www.myanmarricefederation.org/

https://www.commerce.gov.mm/

https://comtrade.un.org/

Appendix 1

The Export Competitiveness Index of Selected ASEAN Countries in Myanmar (2020-2022)

Year	Rice Export Value (‘000 $)	World Rice Export Value (‘000 $)	World Total Export Value (‘000, 000 $)	CES	WES	ECI
2010	22106	2,221,976.38	1,006,833.56	0.00995	0.0022069	4.51
2011	33948.5	4,624,463.41	1,152,164.72	0.00734	0.00401372	1.83
2012	42854.06	10,222,288.10	1,263,452.64	0.00419	0.00809076	0.52
2013	36727.54	10,451,666.27	1,247,094.20	0.00351	0.00838082	0.42
2014	53307.04	11,556,670.68	1,403,857.32	0.00461	0.00823208	0.56
2015	54791.3	11,016,136.03	1,358,761.08	0.00497	0.00810749	0.61
2016	41054	10,034,796.38	1,280,032.14	0.00409	0.00783949	0.52
2017	105793	12,539,007.64	1,538,640.76	0.00844	0.00814941	1.04
2018	86845	11,759,121.85	1,523,924.48	0.00739	0.00771634	0.96
2019	85266	9,786,469.57	1,387,088.34	0.00871	0.0070554	1.23
2020	72634	14,537,589.62	1,432,753.02	0.00500	0.01014661	0.49
2021	60002	21,182,575.54	1,647,781.24	0.00283	0.01285521	0.22
2022	73739.3	22,062,190.96	1,771,638.00	0.00334	0.01245299	0.27

Source: wits.worldbank.org,(2022)

Appendix 2

The Export Competitiveness Index of Selected ASEAN Countries in Thailand (2020-2022)

Year	Rice Export Value (‘000 $)	World Rice Export Value (‘000 $)	World Total Export Value (‘000, 000 $)	CES	WES	ECI
2010	285,704	2221976.379	1006833.56	0.12858	0.0022069	58.26
2011	336,232	4624463.407	1152164.72	0.07271	0.00401372	18.11
2012	219,323	10222288.1	1263452.64	0.02146	0.00809076	2.65
2013	212,281	10451666.27	1247094.2	0.02031	0.00838082	2.42
2014	346,401	11556670.68	1403857.32	0.02997	0.00823208	3.64
2015	308,821	11016136.03	1358761.08	0.02803	0.00810749	3.46
2016	312,358	10034796.38	1280032.14	0.03113	0.00783949	3.97
2017	368,160	12539007.64	1538640.76	0.02936	0.00814941	3.60
2018	354,107	11759121.85	1523924.48	0.03011	0.00771634	3.90
2019	238,903	9786469.573	1387088.34	0.02441	0.0070554	3.46
2020	180,480	14537589.62	1432753.02	0.01241	0.01014661	1.22
2021	198,417	21182575.54	1647781.24	0.00937	0.01285521	0.73
2022	242,598	22062190.96	1771638	0.01100	0.01245299	0.88

Source: wits.worldbank.org,(2022)

Appendix 3

The Export Competitiveness Index of Selected ASEAN Countries in Vietnam (2020-2022)

Year	Rice Export Value (‘000 $)	World Rice Export Value (‘000 $)	World Total Export Value (‘000, 000 $)	CES	WES	ECI
2010	212659.72	2221976.379	1006833.56	0.10	0.0022069	43.37
2011	221060	4624463.407	1152164.72	0.05	0.00401372	11.91
2012	243702.86	10222288.1	1263452.64	0.02	0.00809076	2.95
2013	211586	10451666.27	1247094.2	0.02	0.00838082	2.42
2014	199743.5	11556670.68	1403857.32	0.02	0.00823208	2.10
2015	208617.48	11016136.03	1358761.08	0.02	0.00810749	2.34
2016	160679.04	10034796.38	1280032.14	0.02	0.00783949	2.04
2017	204891.04	12539007.64	1538640.76	0.02	0.00814941	2.01
2018	208112.2	11759121.85	1523924.48	0.02	0.00771634	2.29
2019	207827.98	9786469.573	1387088.34	0.02	0.0070554	3.01
2020	194753.86	14537589.62	1432753.02	0.01	0.01014661	1.32
2021	198069.76	21182575.54	1647781.24	0.01	0.01285521	0.73
2022	222765.32	22062190.96	1771638	0.01	0.01245299	0.81

Source: wits.worldbank.org,(2022)

Appendix 4

The Export Competitiveness Index of Selected ASEAN Countries in Cambodia (2020-2022)

Year	Rice Export Value (‘000 $)	World Rice Export Value (‘000 $)	World Total Export Value (‘000, 000 $)	CES	WES	ECI
2010	23685	2221976.379	1006833.56	0.01065943	0.0022069	4.83
2011	27158.8	4624463.407	1152164.72	0.00587285	0.00401372	1.46
2012	28422	10222288.1	1263452.64	0.0027804	0.00809076	0.34
2013	33948.5	10451666.27	1247094.2	0.00324814	0.00838082	0.39
2014	31580	11556670.68	1403857.32	0.00273262	0.00823208	0.33
2015	36317	11016136.03	1358761.08	0.00329671	0.00810749	0.41
2016	33159	10034796.38	1280032.14	0.0033044	0.00783949	0.42
2017	36317	12539007.64	1538640.76	0.00289632	0.00814941	0.36
2018	41054	11759121.85	1523924.48	0.00349125	0.00771634	0.45
2019	42633	9786469.573	1387088.34	0.00435632	0.0070554	0.62
2020	42633	14537589.62	1432753.02	0.0029326	0.01014661	0.29
2021	58423	21182575.54	1647781.24	0.00275807	0.01285521	0.21
2022	53686	22062190.96	1771638	0.00243339	0.01245299	0.20

Source: wits.worldbank.org, 2022