

**YANGON UNIVERSITY OF ECONOMICS  
DEPARTMENT OF ECONOMICS  
MASTER OF DEVELOPMENT STUDIES PROGRAMME**

**THE EFFECT OF COVID-19 ON THE PERFORMANCE OF  
LOGISTICS FOR ROAD FREIGHT TRANSPORTATION  
IN MYANMAR**

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**FEBRUARY, 2023**

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LOGISTICS FOR ROAD FREIGHT TRANSPORTATION  
IN MYANMAR**

A thesis submitted in partial fulfillment of the requirements for the Master of  
Development Studies (MDevS) Degree

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## **ABSTRACT**

This study analyzes the effect of COVID-19 on logistics performance for road freight transportation in Myanmar. The study used descriptive analysis to find out the operational challenges and supply chain disruptions faced by the logistics industry in Yangon. The findings show that the pandemic significantly disrupted logistics operations, reducing transportation capacity, increasing costs, and longer delivery times. However, during the pandemic, firms struggled to control costs and maintain accuracy, resulting in poor distribution and logistics performance due to supply chain disruptions and delays. Also, logistics information technology integration and real-time management data were affected. The study recommends reassessing logistics strategies, identifying new cost-saving measures, and improving data integration processes and value-added services. Inter-ministerial coordination and enhanced connectivity between diverse modes of transportation are critical to reducing transportation costs and lead times. The study highlights the need for continued research and policy attention to ensure the resilience and sustainability of Myanmar's logistics industry in the face of future crises.

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## LIST OF ABBREVIATIONS

3PLs	Third Party Logistics Providers
CERP	COVID-19 Economic Relief Plan
CLM	Council of Logistics Management
CSR	Corporate Social Responsibility
DCA	Department of Civil Aviation
DOB	Department of Bridges
DOH	Department of Highways
ICT	Information and Communication Technology
IWT	Inland Water Transport
JIT	Just In Time
KPIs	Key Performance Indicators
LLDC	Land-locked Developing Countries
LPI	Logistics Performance Index
LSPs	Logistics Service Providers
MCDC	Mandalay City Development Committee
MHTSA	Myanmar Highway Freight Transportation Services Association
MIFFA	Myanmar International Freight Forwarders Association
MOC	Ministry of Construction
MOTC	Ministry of Transport and Communications
MPA	Myanma Port Authority
MR	Myanma Railway
NATALA	Border Areas and National Races and Development Affairs
PPP	Public-Private Partnership
SKUs	Stock Keeping Units
SOE	State-Owned Enterprise
WCO	World Customs Organization
WHO	World Health Organization
WMS	Warehouse Management System
WTO	World Trade Organization
YCDC	Yangon City Development Committee

# **CHAPTER I**

## **INTRODUCTION**

### **1.1 Rationale of the Study**

The country's logistics sector is transforming due to increased economic activity, connectivity improvements, and the entry of critical multinational firms. The country's logistics sector has been hampered for many years by a need for more suitable transportation infrastructure. However, the country's ongoing advances present many prospects for the logistics sector.

The country's strategic location is one of the most critical factors in attracting investments. Geographically, the country is significant since it links China and India, two of the largest economies in Asia. In addition, the government serves as a continental bridge, linking the neighborhoods of South Asia, East Asia, and Southeast Asia. Over three-quarters of the country's logistics providers provide conventional services, such as unloading, loading, customs clearance, and forwarding. Meanwhile, other companies are providing value-added services such as labeling, delivery tracking, and cold storage, amongst other things.

In addition to logistics, COVID-19 has affected several industries. The retail, logistics, and manufacturing industries have all been negatively impacted by demand and supply shocks, which have, in turn, caused disruptions in global supply chains. Additionally, aircraft cancellations might increase the cost of freight. As a result, the nation will be unable to handle its short- and medium-term economic challenges since it relies on commerce, investment, and technology worldwide.

Logistics would only be able to exploit its benefits with reliable transportation infrastructure. In addition, an efficient transportation system for logistics activities has the potential to boost service quality while simultaneously lowering operating costs and

improving logistical efficiency. As a result, COVID-19 has impacted many businesses, most notably those involved in transportation and logistics.

Logistics involves organizing and carrying out the efficient transportation and storage of products from their starting point to consumption. The mode of transportation has an impact on the efficiency of moving products. There are three kinds of transportation: (i) land transport, (ii) sea transport, and (iii) air transport. Moving loads, delivery speeds, service quality, operational costs, facility utilization, and energy conservation have all improved due to new techniques and management principles. Therefore, transportation is critical in logistics manipulation.

There are a variety of routes that one can take to arrive at their desired location. However, the time of arrival is rarely up for discussion. The Freight Logistics business area is responsible for ensuring that products are delivered on time, at an efficient cost, and in a condition that is free from damage. In addition, globalization has increased the demand for transportation networks that are both effective and efficient. If a market utilizes them, all kinds of transportation can connect towns, regions, countries, and continents.

Freight Logistics organizes and manages transport operations by leveraging its assets and market-developed capabilities. The range of products encompasses the entirety of transportation services. End-to-end shipment tracking enables us to track the progression of deliveries. From the Yangon area to the domestic central hubs, where goods continue their path, even to faraway places where they were acquired at the market, is pretty close. Regarding international shipments, customs services offer extra protection to valuable or sensitive goods.

During peak periods, cargo space on the international sea and air freight services may be limited. However, since the Air & Ocean business unit, selected shipping companies, and air freight carriers have worked together for many years, the transportation services are highly reliable concerning planning. Because Myanmar's air freight infrastructure is limited, there are few aircraft freighters, and Yangon ports can be quite congested at times, people in Thailand and Singapore are increasingly offering a combination of sea, air, and truck services for huge and risky commodities. Cross-border trucking between Thailand and China is becoming more popular because it takes less time than ocean freight to get there. Moreover, industrial developments and oil and gas logistics are critical to Myanmar's development. With the help of experts in global networks and local partners, even the most challenging areas of Myanmar can get

complete services for heavy or oversized cargo that does not fit in a container. As a critical link in the supply chain, customs formalities are required for all shipments to or from Myanmar. In-house customs professionals are available to answer queries and facilitate seamless customs procedures.

Myanmar's economic, cultural, and transportation hubs are located in Yangon, the country's most populous city and its commercial and industrial hub. In Yangon Region, there were just four districts and 45 townships. On April 30, 2022, the temporary administration enlarged these districts to fourteen. The city of Yangon presently includes 33 of the 45 townships. Traffic congestion is the primary issue in Yangon. Therefore, the provision of public transportation that is not only efficient but also secure and affordable is vital to our well-being. In Yangon, the worst traffic congestion occurs.

COVID-19 affected many sectors, including transportation. This study focuses on road freight, which is land transportation for goods. During the pandemic, there were delays at checkpoints and toll gates, and delivery times were impacted. Transportation costs also increased, and drivers became more aware of their health.

Therefore, this study is needed to find out how COVID-19 affects the performance of road freight transport and logistics. This helps the study area achieve some expected positive results.

## **1.2 Objective of the Study**

The objective is to analyze the effect of COVID-19 on the performance of logistics for road freight transportation and to find out the operational challenges that the road freight transportation industry faces due to the COVID-19 pandemic in Yangon.

## **1.3 Method of Study**

This study uses a descriptive analysis. Both primary and secondary data are applied to achieve the objectives. A questionnaire survey was conducted as a requirement for quantitative and qualitative approaches. Primary data collection includes information from freight and cargo owners, drivers, and consumers using a simple random sampling method.

The secondary data was collected from association records, relevant textbooks, articles, journals, research papers, and internet websites.

#### **1.4 Scope and Limitations of the Study**

The study emphasizes the impact of the COVID-19 pandemic on the performance of the logistics industry, mainly road freight transportation in Myanmar. The study covers the period from August 2022 to October 2022. However, the study only highlights 300 respondents in the Yangon area because Yangon is the central economic city in Myanmar, and much of the country's transport is concentrated in Yangon.

Therefore, 300 respondents, including directors, managers, drivers, and customers relating to these companies, were selected to be interviewed to analyze the effect of COVID-19 on logistics performance for road freight transportation.

#### **1.5 Organization of the Study**

There are five chapters in this study. Chapter one presents the introduction, rationale, objectives, method, scope, limitations, and study organization. Chapter two is the literature review. Chapter three states an overview of road freight transport and logistics in Myanmar. Chapter four examines the survey analysis, and Chapter five is the conclusion.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.1 Defining Logistics and Logistics Strategies**

##### **2.1.1 Logistics**

Logistics is the process of planning, implementing, and controlling procedures for the efficient and effective transport and storage of goods, including services and related information, from the point of origin to consumption, with inbound, outbound, internal, and external movements. This includes inbound, outbound, internal, and external movements. (Lambert & Stock, 2008). Logistics aims to meet customers' needs in a timely and cost-effective manner. Initially, logistics was vital in moving military personnel, equipment, and materials. While logistics is as vital in the military as it has always been, the term is now more generally used in transporting commercial commodities within the supply chain.

According to the Council on Logistics Management (CLM), "Logistics is the process of planning, implementing, and controlling the efficient and effective flow of goods, services, and related information from the point of origin to the point of consumption to meet customer requirements." (Johanson, Wood, Wardlow, and Murphy, 1999). It is the process through which a product's origin to its final destination and any corresponding data and information are efficiently and cost-effectively flowed and stored.

Logistics encompasses all the information and material flows throughout an organization. It includes everything from the movement of a product or service that needs to be rendered to the management of incoming raw materials, production, storing finished goods, delivery to the customer, and after-sales service ( Ittmenn & King, 2010). The commonality of the recent definitions of logistics is that it is a process of moving and handling goods and materials from the beginning to the end of the production, sale process, and waste disposal, to satisfy customers and add competitiveness to the business (Tseng, Yue, & Taylor, 2005).

Transportation and warehousing are the two main components of logistics. Transportation management involves planning, optimizing, and executing vehicles to transfer items between warehouses, retail sites, and customers. Numerous forms of transportation are available, including water, air, train, and road.

### **2.1.2 Logistics Management**

Logistics management is the process of getting, moving, and storing materials, parts, and finished inventory (as well as the related information flows) in a strategic way across an organization and its marketing channels to maximize current and future profits by fulfilling orders most cost-effectively. (Christopher, Logistics & Supply Chain Management, 2011).

In recent years, business practices have changed. As a result of technological advancements, logistics management has grown and acquired more importance in making business. Logistics management is preserved as a part of supply chain management that concerns the efficient management of goods. The process of managing that ties together the flow of goods, services, information, and money, from getting the raw materials to getting them to the consumer. (Springinkle & Wallenburg, 2012). Logistics management aims to deliver the appropriate product with the right quality at the right time and place for the right price to the final customer (Mentzer et al., 2004). Therefore, logistics management aimed as a high priority for contemporary organizations. The success of logistics management is determined by the combination of efficiency, effectiveness, and differentiation (Fugate *et al.*, 2010). Eventually, due to procrastination, supply chain management measures affect price/cost, product quality, and innovation (Mamad & Chahdi, 2013).

### **2.1.3 Logistics Strategies**

Logistics strategies are plans and actions a company or organization takes to manage the movement of goods and services efficiently and effectively from the point of origin to consumption. It includes coordinating various activities such as transportation, warehousing, inventory management, and information technology to optimize the supply chain and meet customer demands. For example, logistics strategies may include decisions about the transportation mode, route planning, warehouse location, inventory levels, and technology solutions to track and manage the movement of goods. Logistics strategies aim to minimize costs, increase efficiency, and improve

customer satisfaction by ensuring that products are distributed in a timely and cost-effective manner.

#### **2.1.4 Logistics Strategies and the Performance of Organizations**

Logistics strategies are made up of principles and policies that monitor the direction, ingrained attitudes, and forces of hard desire that drive and help to match the goals and objectives of the entire organization, working plans, and guiding policies that are strengthened through subconscious and conscious behavior within and between partners across a network (Hayes & Wheelwright, 1984). In the 1970s, a business strategy established the direction that defined the business institution and ensured consistency within the institution (Mintzberg, 1998). From the logistics perspective, logistics strategy is perceived to encourage business strategy while aiming to improve and boost organizational performance (Bourlakis & Bourlakis, 2001). Furthermore, functional strategies complement each other and the firm's corporate strategy (Fine & Hax, 1985). As a result, logistics strategies must be integrated with other functional strategies while conforming to basic business decisions and fundamental criteria for a strategy.

Logistics researchers have used various methods to evaluate performance (Chow et al., 1994) (Bowersox et al., 1999). However, researchers usually need help defining and quantifying performance because organizations frequently and numerous times have competing aims (Chow et al., 1994). Therefore, the definition of performance is contingent upon the person doing the evaluation (Haytko, 1994).

Numerous studies have examined logistics management's impact on organizational performance (Green, Jr, Whitten & Inman, 2008). For example, Civelek, embrace, Artar, and Uca (2015) explained organizational performance; the dimensions of organizational performance were taken as size, sales, efficiency, and effectiveness, which are widely accepted in the literature.

## **2.2 Logistics Strategy Influencing Factors**

Critical success factors for effective logistics practices are proper planning, adoption of automation, value relations, a warehouse management system, an efficient transportation system, and performance measurement and improvement.



**(a) Proper Planning**

Planning is crucial for practical logistics. It involves collecting, storing, and transporting goods to their ultimate destination. Planning aims to achieve as much work as possible in the least amount of time while also maximizing profitability. Therefore, a skilled logistics manager will plan to eliminate supply chain delays. However, one must also be prepared for unexpected situations. These situations can be related to the products (source, purchasing, and manufacture), the inaccessibility of transportation, or any internal organizational challenge.

**(b) Adopting Automation**

In today's age of automation, increasing an organization's productivity depends mainly on the strategic use of numerous technological tools. For example, one of the many ways the logistics process may be automated is the tracking and monitoring of each delivery. However, there are many other ways in which this process can be automated as well.

**(c) Value Relations**

A team is an essential component of any organization, especially one responsible for its development. Everyone, from the person in charge of delivery to the warehouse manager, is expected to conduct themselves professionally when carrying out their responsibilities. Participation in frequent training seminars keeps the workforce abreast of the most recent logistics industry developments. This contributes to greater productivity and customer satisfaction. A logistics manager with strong people skills is crucial for the company's success. There will be instances when things have been planned differently than they had anticipated they would. Instead of losing its excellent and stressing out, it should seek out a trustworthy individual who can fix problems most effectively. Furthermore, the manager must have significant relations inside the industry. This can be benefited by taking advantage of the chances given by the corporate environment.

#### **(d) Warehouse Management System**

With proper warehouse management, even the most effective strategy for logistics management will be sufficient to ensure success. "warehouse management system" (WMS) refers to a software application intended to aid and optimize warehouse functionality and distribution center management. A warehouse management system (WMS) makes use of a database that has been configured to assist warehouse activities. This database comprises a range of common warehouse elements, such as individual stock-keeping units (SKUs) that are handled and kept, such as weight, dimensions, case pack, automatic ID labels (bar codes), and inventory by location, as well as the date of manufacturing. This includes warehouse storage locations, dock doors (e.g., individual numbers), and expected worker productivity rates based on the function or activity (e.g., cases picked per man-hour).

#### **(e) Efficient Transportation System**

Transport costs comprise a substantial portion of an organization's overall logistics costs. As a result, companies are constantly attempting to figure out how to move their commodities from point A to B most efficiently and cost-effectively. The decision-making process for a company's transportation needs includes identifying the optimal delivery route, cost-effective packaging that ensures low investment and product safety, and lead time to provide cost-effective modal options such as rail or barge. Other factors that affect product delivery and quality include the distance between customers and warehouses and the logistics-critical goods and services.

#### **(f) Performance Measurement and Improvements**

Optimizing a logistics network is complete once performance monitoring, analysis, and feedback are included. Furthermore, when new strategies are implemented in the system, the output must be evaluated since the new strategies will change the situation, affecting supply chain performance. Therefore, integrating measurement equipment and software that can quickly determine and classify information based on demand is necessary. Some examples of such measurements are shown below.

- Cycle time metrics (e.g., production cycle time and cash-to-cash cycle)
- Cost metrics (e.g., cost per shipment and cost per warehouse pick)
- Service/quality metrics (on-time shipments and defective products)
- Asset metrics (e.g., inventories)

In order to score-card the performance of LSPs (Logistics Service Providers) and link payment conditions to these measures, global logistics metrics and key performance indicators (KPIs) are currently being designed and applied. Being receptive to suggestions from any source is helpful when improvising. Documenting employees' consistent suggestions and comments are essential. This strategy not only helps produce additional ideas but also reveals systemic weaknesses.

Many organizations are going global to increase market share and take advantage of improved production and sourcing efficiency in today's increasingly competitive market. The importance of the logistics function in ensuring the continuous flow of resources, products, and information throughout the company's supply chains are a crucial aspect of its business performance. For organizations to remain competitive, they must recognize the strategic significance of logistics planning and use cutting-edge technology and a creative strategy. The finest practices of companies with strategic logistics will enhance operational efficiency, ensure customer satisfaction, and increase output.

### **2.3 Road Freight Transportation Development**

The road transportation industry is an essential mode of transport. Along with shipping and inland water transport, road freight transport has become the dominant freight transportation in recent years. Moreover, road transportation is the most prevalent domestic transportation, linking rural areas and facilitating regional and international commerce.

Compared to other ASEAN countries, the road network in emerging countries could be stronger and more developed, with over fifty percent of roads unpaved. However, transportation is expensive and time-consuming due to inadequate infrastructure and Southeast Asia's low motor vehicle penetration. Consequently, the country's trucking expenses are higher than other ASEAN countries.

In order to enhance freight transport efficiency and optimize sector investments, a logistics corridor development strategy has been considered. This policy would emphasize investments in six so-called logistical corridors, including major transportation and freight networks, highways, and waterways connecting significant industrial clusters to border gates and ports. The majority of players in logistics and freight transportation are privately owned companies.

(1) Trunk Road: Most long-distance freight transport takes place along the portion of the road that connects two locations. Even though the expressway has been built, heavy-duty trucks are not permitted to use it. The country's heavy-loaded vehicle transit efficiency could be stronger regarding long-distance travel.

(2) Regional Roads: Regional trunk roads still need development. When the country extended its doors to the rest of the world, it disregarded its connections with neighboring countries. Road transport capacity cannot accommodate future freight traffic. Bridges have structural flaws and cannot support heavy-duty vehicles. Many bridges will have to be reinforced or replaced.

(3) Domestic Connectivity: Connectivity between rural and urban areas is inadequate and prone to natural calamities such as floods and landslides. Therefore, connectivity must be improved on both a regional and domestic basis.

## **2.4 Measurements on Performance of Road Freight Transportation and Logistics**

### **(I) Internal and External Measures of Performance**

There are two different kinds of performance measures, which can be categorized as internal or external. The performance of internal measures pertains to the effectiveness and efficiency of an organization's internal production and logistics processes. These performance categories indicate how good organizations operate in specific manufacturing and logistics areas, including cost, delivery time, quality, speed, reliability, customer service, flexibility, and distribution.

### **(II) On the Basis of Outcome and Behavioral Performance**

There are two types of performance measures: outcome-based performance and behavior-based performance. The standard of outcome-based performance in a distribution channel focuses on a channel member's results, viewed as channel member satisfaction or financial performance measures. Meanwhile, behavior-based performance emphasizes a channel member's tasks like warehousing, marketing, and delivery. Multiple indications cover both outcome and behavior performance in integration; therefore, this is the best way to evaluate channel members' performance.

### **(III) The Financial and Operational Performance**

Financial and operational performance highlights the key operational success variables contributing to financial performance. The performance of logistics is included in the performance of operations. Cost-effective operations, such as the affordable nature of using resources concerned with given service quality, can reflect logistics effectiveness. The decision support system plays a crucial function.

Logistics performance refers to the effectiveness, efficiency, and differentiation of conducting logistics activities and adding value to the customer's receipt of value from logistics activities. Effective logistics coordination implies that collaboration between the department and external parties results in an efficient flow of goods and information. Both the performance of logistics and the performance of the organization as a whole are enhanced when they are executed effectively.

#### **(IV) Intangible and Tangible Performance**

Intangible performances include organizational performance lead time, delivery performance, customer services such as order fulfillment, and teamwork. Cost, delivery time, productivity, and profitability establish tangible measurements. Other implications of the pandemic on road freight transportation performance include the following:

- Restricting cross-border mobility.
- Restricting truck travel.
- Promoting social distancing
- Encouraging hand washing and sanitization.
- Imposing regional lockdowns.

This literature and this study are investigated in four parts for the effect of COVID-19 on road freight transportation logistics performance before and during COVID-19. These are logistics strategies in freight transportation, influencing factors of logistics strategy, measurements of the performance of road freight transportation, and challenges for road freight transportation.

Logistics strategies in freight transportation are studied by effectively managing activities, distribution costs, internal and external system integration, maximum efficiency from distribution, value-added systems, management of the firm striving to control cost drivers, internal order checking, accurate order picking procedures for logistics activities, order planning for smoothing demands, order picking and assembly

procedures, and the use of information technology in the logistics function to fulfill orders and to reduce transaction cost.

Warehouse management systems and information systems are considered influencing factors of logistics strategy. The warehouse management system is measured by four points: the cost of capital used for inventory decisions is the same as that used for other investment decisions; the firm uses material requirements planning, which is essential for inventory control; the firm uses inventory value analysis to manage the inventory, and the firm has visibility and tracking information systems. The information system is based on nine facts: the firm's logistics information systems capability is better today than that of five years ago, the firm is consistent in interdepartmental operating goals relative to other areas within the firm, the logistics share of information system resources has increased over the last five years, the logistics information systems are satisfactory in terms of meeting the firm's requirements, the logistics information applications for order processing, selection, and shipping within the firm are highly integrated, the firm develops a user-friendly website to provide logistics matters, the firm views IT applications as essential to increase competitiveness, the percentage of transactions completed using IT has increased over the last five years, and the firm uses bar code technologies that are essential to increase competitiveness.

Performance of road freight transportation is measured by transport cost, delivery time, quality, customer service, guidelines and procedures, operations, employees of other firms in the supply chain, negotiation with other departments, business units, suppliers, purchasing, manufacturing, and distribution costs, internal system integration, data integration among internal functions, the marketing department, and value-added systems.

Moreover, challenges for road freight transportation are observed in capacity, compliance, cost reduction, customer service, data management, inventory management, labor, risk management, transport optimization, visibility, security, and none during COVID-19. In addition, the amount grows or shrinks, profits go up or down, and the organization currently affected by COVID-19 experiences improvements in organization, sales, project delays, supply chain disruptions, transport delays, human resources, revenue, funding difficulties, and government preventive measures.

## **2.5 Review on Previous Studies**

An overview of the road freight transport studies shows economic analysis. Some of them are described as follows.

Corinne Blanquart & Antje Burmeister (2009) examined evaluating the performance of freight transport: a service approach. The objective is to develop an alternative framework for evaluating performance in freight transport based on heterodox service economics. Transport performance is analyzed through productivity measures, even though these indicators' conceptual, methodological, and practical problems are well measured. This applies a typology of transport service configurations. The empirical analysis uses data from a large-scale transport survey in France. This analysis results in an array of performance indicators, each corresponding to specific types of transport services. This study found many ways of achieving performance in freight transport but various service configurations, each with a particular performance logic.

Alejandra Rivera (2020) reviewed the impact of Covid-19 on transport and logistics connectivity in the landlocked countries of South America. The study has examined the impact of Covid-19 on Bolivia and Paraguay, two landlocked countries in South America. These studies proposed policy recommendations to improve connectivity and sustainable logistics in the region. The studies used a case-study research methodology that employed quantitative and qualitative methods to assess the impact of COVID-19 measures on international connectivity. They evaluated various dimensions of connectivity, including airport connectivity, maritime (indirect) connectivity through seaports in neighboring countries, inland transport to transit countries, and ICT connectivity. The results showed that despite international recommendations for trade facilitation, these LLDCs experienced significant disruptions in their international connectivity, which has important implications for their transport and trade environments. These studies highlight the need for governments and stakeholders in the transport and logistics industries to work together to improve connectivity, and smooth transport flows in the region.

Daniyal Saleem Siddiqui (2020), studied the impact of Covid-19 on the logistics industry. This literature review explores the effects of COVID-19 on an aviation company that provides parts and maintenance services to commercial and military sectors. Two research questions were addressed: the impact of the pandemic on the

company's demand and lead times and the steps taken to improve work conditions during the pandemic. A case study was conducted on a company based in Dubai, with services across the Middle East, Africa, and Asia. The study analyzed the company's lead times and demand history for 2019 and 2020 and assessed the impact of COVID-19 on the company's stability. The study also examined the company's corporate social responsibility (CSR) initiatives and their effect on workforce availability and stability. The findings suggest that a positive and focused approach towards the workforce can increase the stability within the company and lead to increased revenue. In addition, the study supplies insights into how firms can achieve workforce stability during a pandemic and how workforce stability can contribute to corporate stability.

Ei Khine Win (2020) studied the logistics strategies of retail businesses in Myanmar. The objectives are to examine the contextual factors that influence the logistics strategies of retail businesses, to analyze the effects of logistics strategies on the organizational performance of retail businesses in Myanmar, and to analyze the moderating effects of organization structure on the relationship between logistics strategies and organizational performance of retail businesses in Myanmar. Quantitative research and descriptive statistics are used in this study. In this study, the types of logistics strategies are classified into process strategy, market strategy, and channel strategy. Organizational structure dimensions are centralization, formalization, and specialization. Organizational performance is measured by logistics coordination effectiveness, customer service commitment and performance, cost reduction, and growth. The study revealed that alliance, inventory management, and information system significantly and positively influence the logistics strategies of retail businesses in Myanmar. Among them, information system has the most substantial influence on logistics strategy.

Furthermore, the study revealed that process and channel strategies positively and significantly affect organizational performance. In addition, formalization moderates the relationship between logistics strategies and organizational performance. Therefore, the management of retail businesses should improve information system capability and efficient visibility and tracking of information systems to implement logistics strategies successfully.

Khaing Zar Zar Htun (2021) studied improving logistics performance index in Myanmar: lessons from Thailand. The objective is to study the best practice for further developing LPI in Myanmar by reviewing the performance of Thailand, which has



progressed to the top performer group in the World Bank's LPI rankings in 2018. It analyzed the performance of Thailand and how it progressed in the LPI ranking. It examined how progress was being made at the LPI ranking in Thailand based on the six components of LPI. Developing Myanmar's logistics sector must integrate significant components structuring the logistics system, including infrastructure, institutional framework, and logistics service providers. Therefore, the government, professionals from the logistics sector, and the stakeholders need to work together to improve the country's logistics sector. In this way, the transport infrastructure and logistics sector will align with international standards, and Myanmar's LPI rank will rise in the coming years.

## **CHAPTER III**

### **OVERVIEW OF ROAD FREIGHT TRANSPORTATION AND LOGISTICS IN MYANMAR**

#### **3.1 Performance of the Transport and Logistics Sector**

The logistics sector in Myanmar operates as the regulator, formulating policies, organizing development plans based on those strategies and policies, and guiding the private sector to build infrastructure and control the logistics sector's operations to keep investment levels as high as possible. The administrative bodies in charge of Myanmar's transportation and logistics developments are composed of the Ministry of Transport and Communications (MOTC), Ministry of Construction (MOC), Yangon City Development Committee (YCDC), and Mandalay City Development Committee (MCDC).

The governance of Myanmar's transport and logistics sector needs to be more cohesive. City Development Committees or Municipal Councils in Yangon, Mandalay, and Naypyidaw govern urban transport systems in these three large metropolitan areas. The Ministry of Transport and Communications (MOTC) is the governing authority over four subsectors: air transport, inland water transport, railway transport, and maritime transport, while the MOC presides over the maintenance and construction of national bridges and roads.

The roads and bridges in rural areas are constructed and maintained by the Ministry of Agriculture and Livestock. Three other powerful ministries, such as the Ministry of Border Affairs, the Ministry of Defense, and the Ministry of Home Affairs, are also responsible for transport and logistics systems in some strategic regions of Myanmar. For example, the Ministry of Border Affairs exercises direct authority over the roads and bridges in the border areas. Given the diffuse and fragmented governance structure over national transport systems, it has been challenging to identify and implement coherent and consistent national policy priorities.

The Ministry of Construction (MOC) is responsible for constructing and maintaining the country's bridges, roads, and airfields. The Department of Highways (DOH) and the Department of Bridges (DOB) under the Ministry of Construction (MOC) in Nay Pyi Taw are responsible for planning and implementing roads and

bridges in the country through the stages of planning, design, and construction. Because of security concerns, the Army Corps of Engineers, or the Ministry for Progress of Border Areas and National Races and Development Affairs (NATALA), undertakes responsibility for roads in border areas of Myanmar. At the same time, the MOC is primarily accountable for the design, construction, and maintenance of national roads and union highways.

The other three powerful ministries, the Ministry of Home Affairs, the Ministry of Defense, and the Ministry of Border Affairs, are also accountable for transport and logistics sectors in specific areas of Myanmar. For instance, the Ministry of Border Affairs gives direct authority to bridges and roads in border areas of Myanmar. (Hein et al., 2017)

The Yangon City Development Committee (YCDC) is a Yangon Municipal Authority that interacts with various public and private stakeholders in the Sector to play a vital role in urban development, planning, and management. It was founded in 1990. The YCDC is in charge of service delivery in Yangon City, which encompasses 33 of the Yangon Region's 45 townships. The "Revenue Department" under YCDC is explicitly responsible for handling the truck terminal, one of the leading infrastructure facilities for logistics development and performance. The YCDC operates and maintains the common area of the truck terminal, which is used for truck parking, and the internal road network. It shows that private companies operate the Yangon truck terminal separately rather than collectively.

Moreover, it is the main reason for fragmentation in the transportation/logistics industry regarding domestic cargo transportation and accounts for poor performance. From the perspective of logistics growth, Yangon City is Myanmar's most important gateway point (NLMP, 2030). Mandalay City Development Committee (MCDC) Mandalay consists of seven townships and is administered by the Mandalay City Development Committee (MCDC), which is in charge of municipal services and public works. The position at MCDC regarding terminal truck planning, management, development, and improvement is the same as at YCDC. Current Situation of Players in the Logistics Sector The following are the major players in Myanmar's logistics sector, which include both the public and private sectors. Private Sector, Various types of private organizations are involved in the logistics sector, including companies operating warehousing, trucking, coastal shipping, inland water transport, air cargo transport, logistics providers, and freight forwarding companies that engage in all

necessary cargo transportation services for both international and domestic freight transport.

At the moment, these companies work in a variety of fields associated with freight transport and logistics. They have formed associations in Myanmar logistics Private Sector: the Myanmar Container Truck Association (MCTA), Myanmar Highway Freight Transportation Service Association (MHTSA), Myanmar International Freight Forwarders Association (MIFFA), Myanmar Transport Logistics Federation (MTLF), GMS Freight Forwarding Association (GMS FFA).

The public sector transportation operators are formed with the State-Owned Enterprise (SOE), excluding the Department of Civil Aviation (DCA), one of the departments under MOTC. DCA operates and manages the civil aviation sector and airports of the country as a whole. The inland waterway transport, seaports, and railway transport are functioned by the State-Owned Enterprises (Myanma Railway (MR), Inland Water Transport (IWT), and Myanmar Port Authority (MPA). Several SOEs and the Departments under MOTC have introduced and implemented public-private partnership (PPP) collaboration in various forms, such as DCA's international airport project and MPA's container terminal operation. Furthermore, PPP projects must be implemented for transport and logistics infrastructure in which highly sophisticated management is required, like logistics parks serving as a multimodal freight logistics hub in Myanmar.

In Myanmar, transportation and logistics costs are high due to several years of lack of investment, strict rules and regulations, and inadequate infrastructure connecting rail, river, and road transport systems (Wong & Wai, 2013). According to the Asian Development Bank (2012) projection, transport-related infrastructure and quality of logistics ranks of Myanmar are lowest in the Association of Southeast Asia Nations (ASEAN) region. The country's significant rivers provide potentially inexpensive internal transportation in the country. However, intermodal linkages' supervision, which connects road, water transport, air, and rail, needs to be developed. Therefore, investments in multimodal transportation logistics systems can assist agricultural activities in reducing transport charges, making the country's agricultural business trade connectivity more attractive (Min & Kudo, 2012).

According to a recent ADB study, investment in the Sector for the last two decades has concentrated primarily on new railways and major highways, with far less attention paid to maintenance and operation, and upgrades in lower-level networks. One

of the most challenging issues in improving the logistics sector in Myanmar is upgrading lower-level networks and connecting with main networks to improve connectivity within the country by reducing transportation costs and expanding operations (JICA et al., 2018).

Myanmar's infrastructure connectivity still seems underdeveloped and needs to meet the increasing demands. Moreover, due to the limited port facility and about one-third of its paved road, inadequate transport networks can also be regarded as substandard (ADB, 2014). Moreover, transportation costs are relatively high due to the high road traffic congestion and a shortage of multimodal transportation systems (ADB, 2016). Generally, the logistics performance of Myanmar is said to need to catch up to that of its regional countries due to the deficiency of the trade-related infrastructure of the country (World Bank, 2014). In addition, border procedures with limited transparency and predictability increase the cost of transport within the country and make border transport more difficult (OECD, 2018).

Transportation and logistics play a vital role in the supply chain at both the regional and international levels. While government orders effectively shut down the transportation and logistics industries, ports remained open for cargo, albeit with delays due to indirect consequences such as new protocols and human resources availability. Depending on the region in which they operate, freight transport can be allowed to land and operate under a variety of restrictions. Digitalization and computerized processes have been critical in keeping the business running.

Express buses are only permitted to transport freight due to the limitations levied by the Ministry of Health, and the stay-at-home orders, health certificate requirements, and 14-day quarantines imposed on visitors in certain states and regions.

### **3.2 Economics Perception on Freight Transport Performance**

Myanmar has a paved road network extending for a total of 157,000 kilometers, of which 3,003 kilometers are part of the ASEAN Highways (AH) system. The National Logistics Master Plan produced by JICA in 2018 found several restrictions linked to the logistics infrastructure in the country.

The growth of the logistics market is driven by improvements in transportation infrastructure, which help boost connectivity. The significant reforms that Myanmar has implemented include the consolidation of the various transportation-related ministries into a single Ministry of Transport, the expansion of transport networks in

order to lower the costs of transportation, the improvement of water transport along the Ayeyarwady and Chindwin rivers, and the authorization of private companies to manage Yangon and Mandalay international airports as part of a public-private partnership (PPP) scheme.

The North-South Logistics Corridor between Yangon and Southern China, the Southeast Logistics Corridor to Thailand, the Trans-Myanmar Logistics Corridor connecting Kyaukphyu in Rakhine State with Tachileik in Shan State, the Myanmar-India Logistics Corridor, the Main River Logistics Corridor and the Coastal Marine Logistics Corridor are all critical components of the plan.

Myanmar's freight and logistics market is fragmented, with many businesses. However, private companies are the leading players in freight transportation and logistics services.

Most of Myanmar's long-distance freight transportation occurs along the section of the road that connects Yangon and Mandalay. Regional trunk roads need to be developed more. Connections with neighboring countries were neglected until 2011 when the country opened its doors to the rest of the world. Future freight traffic must be accommodated by something other than road transport capacity. Bridges are structurally deficient and cannot accommodate heavy-duty vehicles. Many bridges will need to be strengthened or replaced. Rural-urban connectivity could be better and more vulnerable to natural disasters like floods and landslides. It is necessary to strengthen connectivity on both a regional and domestic scale.

For having the merchandise and supplies shipped out or shipped in, trucked out, or trucked in with good timing and intact for their customers, retailers need efficient services from reliable LSPs. LSP integrates with retail businesses by creating relationships with trade partners that share information in real-time, bring agility, and increase value in trade, reaction, and service times.

Over 4,000 logistics companies, including 880 domestic freight forwarders and 800 trucking companies, are in Myanmar (Colliers International, 2019). Most transporters are situated in Mandalay, Yangon, Sittwe, Muse, Lashio, and Myawaddy in Myanmar. In addition, logistics enterprises in Myanmar that provide retailers with freight forwarding, warehousing, courier express, parcel, 3PL, and e-commerce logistics are running in Myanmar.

Freight forwarding is a prosperous industry because Myanmar is strategically located between India and China and has sea connectivity via Yangon port. Road freight

has the highest share of overall freight revenues and volumes. Sea freight contributes the second largest share since Yangon Port is a main trans-shipment center for Southeast Asia.

The Myanmar warehousing industry is in the growth stage. In progress, warehouses are being built, while a few are operational, such as the facilities in Thilawa's special economic zone and Daizen's bonded warehouse. International companies, including Damco and DHL, have identified Myanmar's warehousing services and are concentrating on developing warehousing services in Myanmar. However, the growth of the courier, express, and parcel logistics markets are hindered because of a strict monopoly until 2013.

The integrated index for postal development was ranked 126 among 170 countries in 2016 (Universal Postal Union [UPU], 2016). Logistics companies, or 3PLs, are essential for retailers to meet customer demand by managing all of their supply chain processes. 3PLs have already negotiated with suppliers, which lets them offer the lowest possible cost. Thus, cost efficiency is improved by outsourcing the logistics process to retailers. They also have warehouses, technology, staff, and transportation that are flexible in logistics processes. By providing delivery services that are liberalized after a strict monopoly for decades, a small market for e-commerce logistics is developed in the primary urban areas of Mandalay and Yangon after over ten years of harsh monopoly.

### **3.3 Logistics Activities in the Myanmar Road Freight Transportation**

In Myanmar, most roads connect north to south along the mountains and rivers. Before 1988, the country's entire road length was 21,943 kilometers. However, after 1988, the government attempted to develop road transportation infrastructure by enacting the following road network policies (Zin, 2013):

- Making a master plan to construct and upgrade 36 highways from north to south and 49 roads from east to west across the country's seven regions and seven states.
- Prioritizing the development within every region in order to develop standards of cooperation and build reconsolidation of the national races.
- Facilitating and encouraging economic activity between Myanmar and other nations, particularly commerce and tourism

As of 2018, the total road length increased to 39,084 km in Myanmar under the Public Works Department, MOC. The surface types of the road lengths are shown in the following table. Among them, more than half of the roads are still unpaved condition.

**Table (3-1) Road Transport Information**

**(Kilometer)**

<b>Road Classification</b>	<b>Concrete</b>	<b>Graval</b>	<b>Bituminous</b>	<b>Matalled</b>	<b>Earth Road</b>	<b>Donkey</b>	<b>Total</b>
Highway	612	11,733	2,441	2,700	1,974	44	19,504
Region and State Roads	50	5,452	3,300	2,941	6,497	1,340	19,580
<b>Total</b>	662 (1.7) %	17185 (44.0) %	5741 (14.7) %	5641 (14.4) %	8471 (21.7) %	1384 (3.5) %	39,084 (100) %

Source: Public Works, MOC

Myanmar's logistics services industry and freight transport sector need to be upgraded to catch up with the growing trade demand. To promote capacity expansion and assist the development of auxiliary logistics services, the government may consider expanding its promotion of investments in the industry (OECD, 2020a). According to the ADB (2016) report, there has been a significant expansion and renewal of the trucking fleet in road freight transport since the government lifted restrictions on truck imports in 2011. Moreover, the lower operating expenses of the newer and larger truck fleets have aided in reducing freight rates in the central corridors. However, other transport mode operators need help to replace the fleet. Correspondingly, Myanmar's existing vessel fleet is aging and small, with an average age of 28 years and a gross tonnage of 3,716 gross tons (Nederland Maritiem Land, 2016).

According to the OECD report (2020), modern logistics and management procedures are generally constrained in most areas, resulting in inefficient asset utilization and poor profitability. For instance, ordinary cargo load factors need to be improved across all means of transportation and even on some vital routes, such as the road links with Thailand, where the number of trucks operating empty for return cargo extends from 25 to 50 percent. Return cargo engagements are not secured in advance, even on routes with relatively high average load capacities (e.g., Yangon-Mandalay), with about ten percent of return cargo arranged by agencies. Most cargo owners



organize their cargo's return on their own after departure (JICA et al., 2018). The limited handling of cargo at the port exacerbates this problem. As a result, truck terminal dwell durations are often long, averaging around 37 hours in Yangon-Mandalay, roughly half the truck turnaround time, which are both excessively long for a 650-kilometer route. Expanding the market for logistics service providers, freight agents, and cargo-truck matching systems should assist in increasing the situation (JICA et al., 2018).

### **3.4 The Status of the Road Freight Transportation and Logistics Sector during COVID-19**

In light of the COVID-19 pandemic, infrastructure and logistics are more critical than ever. Continuous logistics services are essential for ensuring a steady supply of food and medical supplies. In addition, connecting external markets during times of crisis requires robust local and cross-border infrastructure and logistics services. Transportation and trade are examined in this paper as a result of COVID-19's effect on connectivity.

Several international institutions, including the World Health Organization (WHO), the World Customs Organization (WCO), and the World Trade Organization (WTO), have been working hard to contain the COVID-19 pandemic's health, social, and economic impacts. International travel and trade should not be restricted due to the outbreak of COVID-19, according to the WHO's "Updated recommendations for international transportation concerning the COVID-19 outbreak." If there are few international links and little response capacity, limits on people's travel may be effective (WHO).

After that, the government took rapid action to restrict travel (cruises and commercial aircraft), increase border crossing surveillance, and impose customs measures to encourage the free flow of necessary products following the declaration.

While the cruise industry was effectively shut down by government orders, ports remained open for cargo, albeit with delays owing to indirect consequences such as new protocols and human resources availability. Ships delivering goods can land and operate under various restrictions, depending on the country where they operate. Digitalization and computerized processes have been crucial in keeping ports operational and ships sailing, despite a dramatic fall in tonnage (Trade News, 2020a).

COVID-19 has a multidimensional impact that can be seen in all modes of transportation, including road connectivity. However, the impact varies according to region and condition. The COVID-19 pandemic has disrupted trade flows due to transportation and logistics disruptions.

Following WHO recommendations, governments worldwide implemented lockdowns and border closures to restrict the movement of goods and people. However, additional protocols, such as social distancing at warehouses, implemented to ensure worker safety, contributed to freight bottlenecks (World Bank, 2020).

Transport and logistics remain essential components of the supply value chain at the regional and international levels. Any disruption in the transportation and logistics industry harms trade, socioeconomic development, and overall sustainability. Supply chain performance and revenue have a symbiotic relationship, demonstrating the Sector's contribution to a country's economic development. The World Bank reported operational constraints for both small and significant supply chain players in 2020, resulting in delivery delays, congestion, and higher freight rates. Most small players in the transportation and logistics sector have been severely impacted due to the lack of a recovery plan, resulting in the closure of operations. Top players, on the other hand, have resorted to using the 'Force Majeure' clause—which allows contracts to be declared null and void due to acts of God or other unexpected circumstances—on all their contracts because of COVID-19 (IFC, 2020).

Services that deliver food, groceries, medical supplies, and packages are among the few businesses thriving during the COVID-19 pandemic after local authorities ordered the closure of bars, dine-in restaurants, and entertainment facilities throughout much of Myanmar. Grocery stores remain open, and many restaurants are offering carryout and delivery. Delivery companies in Myanmar have seen a surge in their businesses in recent months. With the streets of Yangon being empty this Thingyan, bicycle couriers dominated the roads, carrying their deliveries for companies like Food Panda and Door2Door. Online transactions reached a high point from early April 2020 onwards. With such high demand, Door2Door temporarily suspended orders between certain hours to meet the incoming requests. Of the 2,500 trucks under the Myanmar Container Trucks Association, only about 30% have been on the road during the pandemic. As more people have been practicing social distancing in recent months due to the ongoing pandemic, the demand for e-commerce has gone high. Many startups have emerged that offer door-to-door delivery services, mainly for grocery items. While

people stay home, delivery trucks and bikes take over the city's roads. Some of the delivery companies even hired bike and taxi car owners on a freelance basis to keep up with the growing demand. The government believes it is the right time to set the way for the development of e-commerce in Myanmar. The COVID-19 Economic Relief Plan (CERP) outlines immediate and short-term actions to be applied before the year's end. The plan outlines specific actions for technology and e-commerce to promote innovative products and platforms, including using digital payments, encouraging retail trade to operate online, and promoting delivery and logistics firms.

### **3.5 Challenges for Myanmar Road Freight Transportation**

Nonetheless, the road freight industry, like other modes of transportation and logistics in general, is in crisis. Simply put, demand is too high and needs to be fully met. There are several reasons for this, including:

The volume of global and regional parcel shipping is increasing. As a result, more parcels are dispatched and transported by road. Global container congestion slows shipping due to a need for more freight containers. Their timing could be better. Many uncleared containers are at ports due to the lockout—and not just containers. Shipboard storage is also complete. Shipping businesses curtailed capacity during the pandemic, which is presently lacking. If a transportation opportunity occurs, it is pricey, and the ports cannot keep up. The pandemic is not yet over. This causes ship unloading delays and, eventually, ship congestion, increasing pressure on road freight as an alternative option. However, not only shipping companies but also road freight transporters are affected. There is a personnel shortage. Not only are truck drivers missing, but so are personnel handling goods on-site.

Following the Corona pandemic, the road freight industry, like other freight sectors, is experiencing capacity constraints. Fortunately, demand for freight transportation has been high since the global economy's recovery—so high that it cannot be delighted. However, two factors are causing problems for international road freight logistics: Freight volumes are steadily increasing, both independently and due to the pandemic.

At the same time, there is a shortage of workers—not only truck drivers but also warehouse operators and other on-site personnel are in short supply. There was already a shortage of qualified drivers in 2020, and this situation is expected to worsen significantly in the near future.

According to industry insiders, rising fuel prices and other costs in Myanmar are forcing freight companies to halt operations. Half Myanmar's freight providers have already ceased operations as trade has declined since China closed its border gates due to the coronavirus. In addition, fuel and spare parts prices have risen as the kyat has depreciated.

High freight transport costs, a lengthy average dwelling time for trucks and vessels, and a low cargo load factor in rural areas are some of the challenges in the logistics industry. In addition, problems of capacity, compliance, cost reduction, customer service, data management, inventory management, labor, risk management, transport optimization, visibility, security, profits, sales, project delays, supply chain disruptions, transport delays, human resources, revenue, funding difficulties, and government preventive measures have happened during COVID-19.

## **CHAPTER IV**

### **SURVEY ANALYSIS**

#### **4.1 Survey Profile**

The study is focused on the performance of logistics for road freight transportation. The study interviewed 300 respondents in the Yangon area because Yangon is the central economic city in Myanmar, and much of the country's transport is concentrated in Yangon. Among the associations in Myanmar's logistics private sector, the Myanmar Highway Freight Transportation Services Association (MHTSA) and the Myanmar International Freight Forwarders Association (MIFFA) were conducted. They run logistics service providers and transportation companies.

Among the logistics Co Ltd, Mega United Brothers Logistics Co., Ltd and U Myat Aung Transport Co., Ltd were chosen in the study area. These two logistics companies have been chosen for the study survey based on several factors:

Their regional popularity and established reputation for providing dependable logistics services make them ideal candidates for study. The companies offer various services, including commodity transportation, freight forwarding, customs clearance, warehousing, and logistics, making them well-rounded examples of logistics firms. The companies have a significant market share and a strong online presence, making them well-connected. Their accessibility for survey purposes was also a consideration in the selection process.

#### **(a) Mega United Brothers Logistics Co.,Ltd**

Mega United Brother's Logistics Co.Ltd has been involved in the logistics industry since 2006, initially under the name "Mann Express Transport Service" until 2010, when it was rebranded as "Mega United Brothers Logistics Co., Ltd." As a result, the company has accumulated a wealth of experience in various aspects of logistics, such as customs clearance, in-country distribution, and warehousing. With this experience, Mega United Brothers Logistics Co., Ltd is dedicated to providing quality and excellent services to clients in Myanmar, both locally and internationally, at a cost-effective price.

Mega Logistics provides a wide range of services, including customs clearance for import and export, in-country distribution covering over 330 townships in Myanmar, warehousing, repacking of supplies, inter-city movement, event management, and more. The company has particularly strong experience in customs clearance and in-country distribution of supplies. In addition, mega United Brothers Logistics Co., Ltd has provided transportation services to various organizations, including government departments, UN agencies, INGOs, and private companies, for distributing various items such as non-food and food items, medical supplies, and emergency response supplies.

The company is led by a director board, chaired by the managing director, and consisting of two executive directors. With over 150 employees, including 18 experienced professionals and administrative/support staff, nine drivers, and eight permanent general workers, Mega United Brothers Logistics Co., Ltd has the human resources and resources to deliver exceptional client services. The company has a main office in Yangon, with branches in Mandalay, Taunggyi, Myitkyina, and Nay Pyi Taw. Additionally, the company owns and operates warehouses in Yangon, Mandalay, and Taunggyi.

**(b) U Myat Aung Transport Co., Ltd.**

The company has provided it to more than two dozen international clients and several local businesses since 2008. So far, there are hundreds of completed projects. In addition, the company has received well-deserved acknowledgment from the UN Logistics Cluster and many humanitarian organizations regarding our reliable service and very reasonable price during the 2008 Nargis cyclone emergency response operation, the 2011 Giri cyclone emergency response operation, the 2012 Tarlay earthquake emergency response operation, humanitarian supply transportation to Rakhine state, the prolonged Kachin armed conflict humanitarian supply transportation, and the 2015 flood, respectively. All the transportation services are being managed and provided by 100 staff nationwide. Moreover, a combined fleet of 34 cargo trucks, three sets of Berge, and a tug boat is being utilized in daily operations. The tonnage handling capacity of cargo trucks through land routes is 30000 tons annually. The tonnage handling capacity of waterways is 192,000 tons (for short distances) and 24,000 tons (for long distances) each annually. Total employees are over 350.

The central fleet station is in Yangon, and there are eight more sub-stations of fleet units in Taung Gup, Sittwe, Maungdaw (the southern and northern parts of Rakhine), Mandalay (Mandalay region and the middle part of the country), Patheingyi (Ayarwaddy), Taung Gyi (Shan), Myeik, and Pakokku. All the operators of trucks and tugboats for our company are experienced and licensed operators and drivers. The company can start our service within six hours after signing the contract, and the quoted price or rate of our service charges in the proposal or contract will remain for a year without any charges, no matter what happens. The company has also been taking care of the welfare of the staff. It has a financial support mechanism for the staff in case of emergencies or funerals. The majority of staff have a minimum of five years of service.

Therefore, 300 respondents, including directors, managers, drivers, and customers relating to these companies, were selected to be interviewed to analyze the effect of COVID-19 on logistics performance for road freight transportation.

#### **4.2 Survey Design**

The survey design of the study included both primary and secondary data applied to achieve the objectives. A questionnaire survey was collected as a requirement for quantitative and qualitative approaches. Primary data collection includes information from freight and cargo owners, drivers, and consumers using a simple random sampling method.

The study utilized a two-stage sampling strategy to evaluate the effectiveness of logistics in road freight transportation. First, 300 participants were interviewed, including directors, managers, drivers, and customers. In the first stage, 100 respondents from U Myat Aung Transport Co., Ltd and 100 respondents from Mega United Brothers Logistics Co. Ltd. were selected. The second stage involved selecting 100 customers who had engaged with the selected companies, serving as sample respondents.

The survey questionnaire was designed with three sections: Section I relates to general information, Section II relates to logistics strategies in freight transportation (before and during Covid-19), influencing factors of logistics strategy (before and during Covid-19), measurement of the performance of road freight transportation, section III relates to challenges for Myanmar road freight transportation.

The secondary data was collected from association records, relevant textbooks, articles, journals, research papers, and internet websites.

### 4.3 Analysis of Survey Results

The first part of the respondents' profiles reveals the socio-demographic information. Then, the study identifies their characteristics, allowing us to examine whether these respondents show signs of different factors. Table (4.1) shows the socio-demographic characteristics of the respondents in the study area.

**Table (4.1) Socio-Demographic Characteristics of Respondents**

Descriptions		Respondents (No)				
		Male %	Female %	Total Male %	Total Female %	Total no: of respondents
<b>Work Experience</b>	2-5 year	27	16	62	38	300
	5-10 year	20	12			
	Over 10 years	15	10			
<b>Education Level</b>	Secondary Certificate	17	1	62	38	300
	Diploma	3	0.5			
	Bachelor's Degree	40	36			
	Master	2	0.5			
<b>Occupation</b>	Director	2	1	62	38	300
	Logistics Manager	13	8			
	Driver	40	3			
	Customer	7	26			
<b>Types of commodity transport</b>	Construction	7	3	62	38	300
	Construction Equipment	7	3			
	Food & Beverage	10	7			
	Consumer Products	15	10			
	Pharmaceutical/ Health Products	15	10			
	Hardware	3	3			
	Others (Specify)	5	2			

Source: Survey Data, 2022

According to Table (4.1), The sample population included male and female participants, with notable differences in work experience. Specifically, a higher percentage of male respondents had 2–5 years (27%), 5–10 years (20%), and over ten years (15%) of work experience compared to their female counterparts (16%, 12%, and



10%, respectively). According to the survey, most participants held a bachelor's degree, with a smaller percentage holding secondary certificates, diploma degrees, or master's degrees. Respondents had a variety of occupations, with the majority being drivers and logistics managers and a smaller percentage being customers or directors. Male respondents outnumbered females in all work experience and occupation categories, with the highest percentage in the pharmaceutical/health products category. Female respondents ranged from 2% to 10% in different commodity categories.

The study involved respondents with varying educational and occupational backgrounds, with the majority holding a bachelor's degree and a high percentage of male drivers and female customers. Consumer and pharmaceutical/health products were the most frequently transported goods, indicating a higher demand for these products.

The second part compares logistics strategies in freight transportation before and during COVID-19. Table (4.2) compares the use of logistics strategies in freight transportation before and during the COVID-19 pandemic. The Table is based on a survey of 300 respondents who were asked to rate their firms' logistics practices using a Likert scale. The Table includes mean values and an overall mean value for each of the 13 logistics-related questions, which are focused on cost management, system integration, efficiency, data integration, value-added systems, cost control, just-in-time (JIT) replenishment, order checking and picking, transportation costs and IT use. The purpose of the Table is to provide insights into the changes in logistics strategies that occurred as a result of the pandemic and to identify the most critical logistics practices for firms during this time to analyze how the firm will operate in logistics activities such as reliability, cost, customer service, and distribution.

**Table (4.2) Comparison of Logistics Strategies in Freight Transportation before and during Covid-19**

<b>No.</b>	<b>Statement</b>	<b>Mean Value before Covid-19</b>	<b>Mean Value during Covid-19</b>
1	In the firm, a primary objective of logistics is to effectively manage activities that result in distribution costs.	4.35	3.5
2	The firm has good result in distribution.	4.55	2.5
3	Management of the firm emphasizes internal and external system integration.	4.1	2.6
4	Management of the firm emphasizes achieving maximum efficiency from distribution.	4	3
5	The firm facilitates data integration among internal external functions.	4	2.9
6	Logistics department manages as a value- added system.	4	2.5
7	Management of the firm strives to control cost drivers by managing material flows.	3.8	3.1
8	The firm has Just in Time (JIT) replenishment.	4.2	2
9	The firm has internal order checking.	4.1	2.7
10	The firm has accurate order picking procedure that is important for logistics activities.	4.3	1.95
11	The firm's transportation cost reasonable.	4.3	3.00

**Table (4.2) Comparison of Logistics Strategies in Freight Transportation before and during Covid-19 (Continued)**

No.	Statement	Mean Value before Covid-19	Mean Value during Covid-19
12	Order picking/assembly procedure is important for customers.	4.2	3.0
13	The firm uses IT in logistics function to reduce transaction costs.	4.1	2.8
	<b>Overall Mean Value</b>	<b>4.15</b>	<b>2.73</b>

Source: Survey Data, 2022

Table (4.2) shows the result of the analysis of logistics strategies in freight transportation compared to the situation before and during Covid-19. Regarding the mean scores, it can be observed that the COVID-19 pandemic has had a negative impact on the performance of logistics for road freight transportation. The overall mean score before COVID-19 was 4.15, indicating that the firm was relatively successful in managing logistics activities and achieving maximum efficiency from distribution. However, during COVID-19, the overall mean score dropped significantly to 2.73, indicating a decline in performance. Specifically, it is indicated that the pandemic has had a negative impact on the firm's ability to effectively manage distribution costs, facilitate data integration among internal and external functions, manage the logistics department as a value-added system, control cost drivers through the management of material flows, and implement a Just in Time (JIT) replenishment strategy. Furthermore, the mean score of results (1.95) indicated that accurate order-picking procedures, order planning, and the use of IT in logistics functions to reduce transaction costs were perceived as less critical during COVID-19. Additionally, the mean score for transportation costs during COVID-19 indicates that they were perceived as less reasonable than before the pandemic.

Table (4.3) compares the warehouse management system of logistics strategy before the Covid 19 pandemic. The Table provides insights into the inventory management strategies employed by these firms based on the responses of 300 participants using a Likert scale. The Table includes mean values for each question and an overall mean value to provide an overview of the results. The questions in the survey

focused on various aspects of inventory management, including the cost of capital for inventory decisions, the use of Material Requirements Planning, inventory value analysis, and visibility and tracking information systems.

**Table (4.3) Comparison of Warehouse Management System of Logistics Strategy before and during Covid-19 pandemic**

<b>No.</b>	<b>Statement</b>	<b>Mean Value before Covid-19</b>	<b>Mean Value during Covid-19</b>
1.	The cost of capital used for inventory decisions is the same as that used for other investment decisions.	4.1	2.1
2.	The firm uses Material Requirements Planning that is important for inventory control.	4.1	2.1
3.	The firm uses inventory value analysis to manage the inventory.	3.6	2.6
4.	The firm has visibility and tracking information systems.	3.6	2.9
	<b>Overall Average Mean Value</b>	<b>3.8</b>	<b>2.5</b>

Source: Survey Data, 2022

Table (4.3) shows the analysis results comparing the warehouse management system of logistics strategy before and during the Covid-19 pandemic. The results show that firms placed greater importance on the cost of capital for inventory decisions before the pandemic (mean score of 4.1) than during the pandemic (mean score of 2.1). Material Requirements Planning effectiveness also significantly decreased during the pandemic (the mean score dropped from 4.1 to 2.1). Furthermore, inventory value analysis performance and visibility/tracking information systems declined during the pandemic, with mean scores dropping from 3.6 to 2.6 and 3.6 to 2.9, respectively. The overall mean score before COVID-19 was 3.8, indicating a generally satisfactory performance in the logistics strategy areas assessed. However, during the pandemic, the overall mean score decreased to 2.5, indicating a significant

decline in performance. Therefore, the firm needs help to manage the inventory effectively due to the Covid-19 pandemic.

Table (4.4) compares firms' logistics information systems before and during the COVID-19 pandemic. A Likert scale questionnaire assessed various aspects of logistics strategy before and during the pandemic. A total of 300 respondents participated in the survey, and mean values were calculated for each question and an overall mean value. The Table includes nine questions that explore different aspects of the firms' logistics information systems, including their capabilities, integration, and use of technology. The mean values for each question and the overall mean value provide insight into how the pandemic has impacted the firms' logistics information systems. These findings can help inform strategies for improving logistics information systems and maintaining competitiveness in future crises.

**Table (4.4) Comparison of the Logistics Information System before and during Covid-19 pandemic**

<b>No.</b>	<b>Statement</b>	<b>Mean Value before Covid-19</b>	<b>Mean Value during Covid-19</b>
1.	The firm's logistics information systems capability is better today than that of five years ago.	4.2	2.5
2.	The firm is consistent in interdepartmental operating goals.	3.8	3
3.	Relative to other areas within the firm, logistics share of information system resources has increased over the last five years.	3.7	3.2
4.	The logistics information systems are satisfactory in terms of meeting firm's requirements in the firm.	3.6	3.4

**Table (4.4) Comparison of the Logistics Information System before and during Covid-19 pandemic (Continued)**

<b>No.</b>	<b>Statement</b>	<b>Mean Value before Covid-19</b>	<b>Mean Value during Covid-19</b>
5.	Logistics information applications for order processing, selection and shipping within the firm are highly integrated.	3.8	2.8
6	The firm develop user friendly website to provide logistics matters.	3.7	3
7	The firm views IT applications as essential to increase competitiveness.	3.7	3.9
8.	The percentage of transactions completed using IT has increased over the last five years.	3.9	3.7
9.	The firm use bar code technologies that are essential to increase competitiveness	3.8	2.9
	<b>Overall Average Mean Value</b>	<b>4</b>	<b>2.7</b>

Source: Survey Data, 2022

Table (4.4) shows the analysis results comparing the Logistics information system before and during Covid-19. Regarding the result of mean values, it can be inferred that the logistics information systems capability of the firm has declined during the COVID-19 pandemic compared to the pre-pandemic period. Similarly, the level of consistency in interdepartmental operating goals, the share of information system resources allocated to logistics, and the integration of logistics information applications have also decreased during the pandemic. However, the satisfaction level with logistics information systems and the recognition of IT applications' importance for increasing competitiveness has only slightly decreased or remained the same. Additionally, the percentage of transactions completed using IT has slightly decreased. The use of bar code technologies for logistics strategy has been perceived to be less effective during the pandemic. According to the overall mean value, it is observed that the Covid-19

pandemic has had a negative impact on the overall effectiveness of the Information System of Logistics Strategy for road freight transportation. The mean score decreased from 4.0 before Covid-19 to 2.73 during Covid-19, a significant drop. These findings suggest that the pandemic has had an adverse effect on logistics performance and that firms may need to adapt to new strategies and technologies to overcome the challenges presented by the pandemic.

Table (4.5) compares measurements on road freight transportation performance before and during the COVID-19 pandemic based on responses from 300 participants using a Likert scale ranging from poor to excellent. The Table includes mean values for each question and an overall mean value. The questions cover a range of topics related to the transportation process, including documentation processes, item condition, customer service, alliance creation and monitoring, delivery time reliability, negotiation with other departments and suppliers, cost management, purchasing and distribution results, internal system integration, data integration, logistics advice to the marketing department, and value-added logistics management. The Table provides valuable insights into how the pandemic has affected the road freight transportation process and can help inform strategies to address the challenges faced by the industry.

**Table (4.5) Comparison of Measurement on Performance of Logistics in Road Freight Transportation before and during Covid-19**

<b>No.</b>	<b>Statement</b>	<b>Mean Value before Covid-19</b>	<b>Mean Value during Covid-19</b>
1.	Documentation process is smooth and quickly.	3.6	1.3
2.	The items received is good in condition.	3.6	1.3
3.	Customer service is good.	3.6	1.3
4	The firm can undergo according to clear guidelines and procedures for creating alliances.	3.3	1.55
5.	The firm can undergo clear guidelines and procedures for monitoring alliances.	3.3	1.55

**Table (4.5) Comparison of Measurement on Performance of Logistics in Road Freight Transportation before and during Covid-19 (Continued)**

6.	The status of delivery time is reliable.	3.05	1.25
7.	The firm can negotiate with other departments, business units, and suppliers.	3.05	1.3
8.	In the firm, a primary objective of logistics is to effectively manage activities that result in purchasing, manufacturing, and distribution costs.	3.45	1.4
9.	The firm can get good results in purchasing and distribution.	3.45	1.6
10.	Management of the firm can emphasize internal system integration.	3.15	1.6
11.	The firm can facilitate data integration among internal functions.	3.1	1.6
12.	The logistics function can provide advice to the marketing department.	3	1.4
13.	The logistics department can manage as a value-added system.	3.1	1.4
	<b>Overall Average Mean Value</b>	<b>3.35</b>	<b>1.35</b>

Source: Survey Data, 2022

Table (4.5) shows the analysis results on the comparison of measurements on the performance logistics in road freight transportation before and during the Covid-19 pandemic. It investigates the impact of the COVID-19 pandemic on the performance of logistics for road freight transportation. The study compares the mean scores of various performance measures before and during the pandemic. The results indicate that the pandemic has had a significant negative impact on several aspects of logistics performance, such as documentation processes, condition of items received, customer service, creation and monitoring of alliances, delivery time reliability, negotiation with other departments and suppliers, cost management, purchasing and distribution, internal system integration, data integration, and advice to the marketing department. According to the overall mean scores, it can be observed that there has been a significant decline in the performance of road freight transportation logistics during the COVID-19 pandemic. The mean score before COVID-19 (3.35) suggests that the logistics



function was somewhat successful in meeting performance expectations, while the mean score during COVID-19 (1.35) indicates a significant decline in performance. These findings suggest that the logistics function needs to address these challenges to ensure effective and efficient transportation of goods during and after the pandemic.

The third part of the respondents' profile states the challenges for Myanmar Road Freight Transportation. Table (4.6) presents the results of a survey conducted to identify the challenges faced by Myanmar's road freight transportation industry. The survey was conducted with 300 respondents, and the results are expressed in percentages. The questions included transportation and logistics challenges, the impact of Covid-19 on the Organization, changes in business relationships, and funding difficulties. The Table provides valuable insights into the current situation of Myanmar's road freight transportation industry and highlights the need for effective solutions to overcome the identified challenges.

**Table (4.6) Challenges for Myanmar Road Freight Transportation**

<b>Descriptions</b>		<b>Response in Percentage (%)</b>	<b>No Response in Percentage (%)</b>
1. Transportation and Logistics Challenges	Capacity	88	12
	Compliance	93	7
	Cost reduction	98	2
	Customer service	100	0
	Data management	83	17
	Inventory management	90	10
	Labor	85	15
	Risk management	67	33
	Transport optimization	98	2
	Visibility	0	100
	Security	88	12
2. No of customers increase or decrease (Select one)	increase Up to 5%	12	88
	Not vary 0%	20	80
	Decrease down to 5%	35	65
	Decrease down to 10% or more	33	67

**Table (4.6) Challenges for Myanmar Road Freight Transportation (Continued)**

<b>Descriptions</b>		<b>Response in Percentage (%)</b>	<b>No Response in Percentage (%)</b>
3. Profits increase or decrease (Select one)	Increase Up to 5%	12	88
	No Vary 0%	22	78
	Decrease down to 5%	32	68
	Decrease down to 10% or more	35	65
4. Organization Currently Affected by Covid-19 (Select One)	Not affected	0	100
	Slightly affected	3	97
	Moderately affected	58	42
	Significantly affected	38	62
5. Improvement in Organization Compared with the Situation One Year Ago (Select One)	Declined compared to one year ago	80	20
	Same as one year ago	15	85
	Slightly improved	5	95
	Moderately improved	0	100
	Significantly improved	0	100
6. Aspects of Business are Affected by the Covid-19 Outbreak (Select One)	Sale decreases	88	12
	Project delay	100	0
	Supply chain disruption	100	0
	Transport delay	100	0
	Human resource	95	5
7. Current Cumulative Impact of the Covid-19 on Organization (Select One)	Below 30% loss revenue	63	37
	below 30-50% loss of revenue	27	73
	above 50% loss of revenue	10	90
	Decrease in transactions	38	62
	No change in transactions	17	83
	Increase in transactions	2	98
8. In 2020 and after, what changes do you expect in your business relationships with (Select one)	Suspension of transactions	42	58
	Decrease in transactions	38	62
	No change in transactions	17	83
	Increase in transactions	2	98

**Table (4.6) Challenges for Myanmar Road Freight Transportation (Continued)**

Descriptions		Response in Percentage (%)	No Response in Percentage (%)
9. Have funding difficulties delayed your company's or a business partner's payment? (Select one.)	Funding difficulties have not affected payments	7	93
	Payment from your company to a business partner (supplier of components and/or materials, goods, or services) has been delayed.	48	52
	Payment from a business partner (who purchased goods or services) to your company has been delayed	45	55
10. When do you expect business activities to return to the pre-COVID 19 pandemic level? (Select one.)	Already returned to normal	0	100
	By the end of 2020	0	100
	The first half of 2021	0	100
	Second half of 2021	29	71
	After 2022	71	29
	No prospect of business activities returning to the pre-COVID-19 level	0	100
11. In your Opinion, is your organization able to operate according to the government preventive measures against Covid-19?	Yes	68	32
	No	23	77
	No Opinion	9	91

Source: Survey Data, 2022

The Covid-19 pandemic has created logistical challenges for all business industries, especially in the transportation and logistics sectors. The Table shows the challenges for Myanmar Road Freight Transportation. According to Table (4.6), the survey results indicate that Myanmar's road freight transportation industry is facing significant challenges due to the COVID-19 pandemic. The majority of respondents identified cost reduction and customer service as critical challenges, with compliance,

inventory management, capacity, and security also being critical issues. The pandemic has had a significant negative impact on the logistics performance of road freight transportation, with a decrease in the number of customers and profits reported by the majority of respondents. Organizations in the industry have been significantly or moderately affected by the pandemic, with a decline in performance reported by 80% of respondents. The outbreak has led to project delays, supply chain disruption, and transport delays, as well as affecting the human resource aspect of the business. The industry has experienced a moderate but still significant decline in revenue due to the pandemic. Many respondents expect a suspension or decrease in transactions with their business partners. Therefore, businesses need to adapt to the changing environment and develop contingency plans to mitigate the impact of COVID-19 on their operations.

## **CHAPTER V**

### **CONCLUSION**

#### **5.1 Findings**

The study is an overview of the logistics sector in Myanmar by reviewing the logistics strategies in freight transportation before and during Covid 19, influencing factors of logistics strategy before and during Covid 19, measurement of the performance of road freight transportation, and challenges for Myanmar road freight transportation.

Moreover, it also outlines the current challenges facing Myanmar's road freight transportation of the logistics sector and commendations for improving Myanmar's Logistics sector.

Results due to the socioeconomic characteristics of the respondents revealed that the respondents vary in educational and occupational backgrounds, with the majority holding a bachelor's degree and a high percentage of male drivers and female customers. In addition, consumer and pharmaceutical/health products were the most frequently transported goods, indicating a higher demand for these products. These findings could inform policymakers and industry players in developing strategies to improve transportation efficiency and equality.

The analysis of logistics strategies in freight transportation before and during Covid-19 reveals that the COVID-19 pandemic has had a significant impact on the logistics operations of the firm. The decline in performance in distribution during the pandemic is likely due to disruptions in supply chains caused by the pandemic, such as border closures, reduced transportation capacity, and increased demand for certain goods. These disruptions have made it more difficult for the firm to maintain the timely delivery of goods required by a just-in-time (JIT) system. Additionally, changes in consumer behavior and the availability and productivity of staff have also contributed to the decline in performance.

The result shows that the pandemic has disrupted the material flow and logistics network, making it more difficult for the firm to manage and control costs. As a result, the firm needs to reassess its logistics strategies and identify new cost-saving measures

better suited to the current pandemic environment. The pandemic has also shifted priorities for firms, with a greater focus on supply chain resilience and flexibility. However, financial pressures have caused firms to prioritize cost-saving measures that have a more immediate impact rather than longer-term investments in IT infrastructure.

The analysis of the survey data also highlights the importance of data integration processes and value-added services in logistics operations. The decline in the mean score during the pandemic suggests that the firm faced challenges maintaining data integration processes. This has affected the logistics department's ability to provide value-added services to the Organization. To address this, the logistics department needs to assess the challenges faced during the pandemic and identify strategies to mitigate these challenges in the future.

The result shows the warehouse management system analysis of logistics strategy before and during Covid-19. One of the key findings of this research is that the cost of capital used for inventory decisions was considered more important by firms before the pandemic than during the pandemic. This result suggests that the pandemic has created a more uncertain and volatile business environment, causing firms to prioritize short-term cash flow and liquidity over longer-term investments in inventory. The pandemic has also disrupted supply chains and caused fluctuations in demand, making it more difficult for firms to forecast inventory needs and justify long-term investments accurately. Alternatively, firms' expectations for the cost of capital used for inventory decisions have remained the same. However, the pandemic has made it more difficult for them to access capital due to reduced revenues, tighter credit conditions, and increased risk aversion among lenders.

The effectiveness of Material Requirements Planning has significantly decreased during the pandemic, with the mean score dropping from 4.1 before Covid-19 to 2.1 during the pandemic. This decrease in effectiveness may be attributed to several factors, such as disruptions in the supply chain, changes in consumer demand, and restrictions on the movement of goods and people. These factors have likely led to delays in transportation, stockouts, and other inventory-related issues, ultimately affecting the firm's ability to manage its inventory effectively.

The firm's inventory value analysis performance declined during the Covid-19 pandemic. The mean score before Covid-19 was 3.6, indicating that the inventory management system was performing satisfactorily, whereas, during Covid-19, the mean score decreased to 2.6, which is below average. This decline in inventory value analysis

performance during Covid-19 could be attributed to various factors, such as supply chain disruptions, transportation difficulties, and uncertainty in demand. It is important to note that Covid-19 has significantly impacted logistics operations, and many firms have had to adapt their strategies to mitigate the effects of the pandemic.

Finally, the firm's visibility and tracking information systems declined during the Covid-19 pandemic. The mean score before Covid-19 was 3.6, indicating that the system was performing satisfactorily, whereas, during Covid-19, the mean score decreased to 2.9, which is below average. This decline in visibility and tracking information system performance during Covid-19 could be attributed to various factors, such as reduced workforce capacity due to social distancing measures, delays in shipment and delivery, and increased demand for logistics services. As a result, the firm may have needed help obtaining real-time information on the location and status of its shipments.

Results revealed that the result analysis of information systems of logistics strategy before and during Covid-19. The results suggest that the Covid-19 pandemic has significantly impacted the logistics industry and the logistics information system. The decrease in the share of information system resources allocated to logistics within the firm and the perceived decrease in the effectiveness of the user-friendly website in providing logistics matters during the pandemic indicate that firms may have been forced to prioritize other areas due to disruptions in supply chains, changes in demand patterns, or difficulties in communication and coordination. The decrease in IT usage for logistics transactions suggests that firms have been forced to rely more on manual processes due to disruptions in IT infrastructure caused by the pandemic.

Furthermore, the decrease in the perceived effectiveness of bar code technologies for logistics strategy during the pandemic suggests that firms may need to adapt their logistics strategies to the changing circumstances caused by the pandemic. This could include investing in new technologies or developing new logistics processes to mitigate the impact of the pandemic on logistics operations. The disruption of logistics operations for road freight transportation highlights the need for firms to diversify their transportation options and invest in reliable transportation infrastructure.

The result shows that analysis of the measurement of the performance of road freight transportation before and during Covid-19. The COVID-19 pandemic has profoundly impacted the logistics industry, including road freight transportation. The disruption caused by the pandemic has led to delays and difficulties in managing

administrative tasks, such as paperwork, due to reduced staffing levels, increased health and safety regulations, and changes in government policies and procedures. These disruptions have had a significant negative impact on the overall performance of logistics for road freight transportation.

The results indicate that the condition of items received during road freight transportation significantly declined during the COVID-19 pandemic compared to before the pandemic. Additionally, the ability of firms to undergo clear guidelines and procedures for creating alliances significantly declined during the COVID-19 pandemic compared to before the pandemic. The decline in this area can have significant repercussions on the firm's performance, highlighting the importance of paying attention to this aspect of their operations and adopting suitable strategies to mitigate the negative effects of the pandemic. However, the decline in the logistics function's ability to provide advice during the COVID-19 pandemic may be due to several factors, such as disruptions to the supply chain, changes in customer demand, and workforce disruptions due to remote work.

The COVID-19 epidemic has complicated business operations, especially transportation and logistics. The result illustrates Myanmar Road Freight Transportation difficulties. The COVID-19 pandemic has significantly impacted the logistics performance of road freight transportation in Myanmar. Our survey results indicate that the industry is facing numerous transportation and logistics challenges that are complex and interrelated, requiring a concerted effort from stakeholders to address them effectively. The pandemic has had a more significant negative impact on the demand for road freight transportation than a positive impact. The results suggest that businesses in the logistics industry in Myanmar are likely to face significant challenges in the coming years, as a significant proportion of businesses experienced delayed payments due to funding difficulties resulting from the pandemic. This can have a cascading effect on the overall performance of the logistics industry, potentially leading to financial strain and disruptions in the supply chain. Moreover, the impact of the pandemic on the industry has been significant, and a prolonged recovery period is expected, highlighting the need for businesses to continue to adapt to the challenges posed by the pandemic and plan for a longer-term recovery.



## 5.2 Suggestions

The COVID-19 pandemic has created unprecedented challenges for the logistics industry and has highlighted the need for businesses to be agile and adaptable in their logistics strategies. The disruptions in supply chains and changes in consumer behavior have had a significant impact on logistics operations and have created a need for businesses to invest in new technologies and transportation options to mitigate the effects of the pandemic on their operations. Additionally, the pandemic has emphasized the importance of data integration processes and value-added services in logistics operations. Therefore, firms must invest in IT infrastructure, identify strategies to maintain data integration processes, and provide value-added services to the Organization during the pandemic. It is also critical for businesses to develop contingency plans and adapt to the changing environment to navigate the challenges posed by the pandemic in the long run. Overall, the logistics industry must continue to monitor and adapt its strategies to effectively manage the pandemic's impact on logistics operations.

The following points should be considered for the sustainable development of Myanmar's logistics sector and road freight transportation; to reduce and rationalize the transportation costs, logistics costs and the lead time for the cargo transportation, costs for all types of international trade and cross-border transactions should be reduced and rationalized, enhancing competitiveness by leveraging cross-border and value-added economic services based on value-added activities, providing appropriate advanced feeder road networks and truck terminals throughout Myanmar to strengthen the hub and spoke freight transport functions, to improve urban-rural cohesiveness by connecting urban-industrial regions with rural regions using efficient freight transportation and rural road linkages, supporting rural development to reduce poverty (including in border areas), increase incomes and job possibilities by creating high-quality jobs in a variety of industries, including the logistics sector.

Inter-ministerial and inter-transport modal coordination needs to be more recognized in implementing the country's logistics sector development since the coordination mechanism between ministries and agencies involved in developing and enhancing the administration's logistics system still needs to be improved. In addition, improved connectivity between diverse modes of transportation is critical in the plan to reduce transportation costs and lead times, which is a critical component of logistics

development planning. Therefore, an effective mechanism for inter-ministerial coordination is vital in developing the country's logistics sector.

Furthermore, cooperation in learning and research and development (R&D) between industry and academics should be strongly encouraged concerning human resource difficulties and other constraints to develop the country's logistics sector. It is needed to ensure the development of professional standards and logistics personnel to meet international quality standards and plan to manage the logistics manpower under the needs of the logistics sector by emphasizing specialized vocational training and supporting cooperation with the private sector in operational level training.

If transportation networks can be used effectively, the country's manufacturing sector will profit substantially. Thus, transportation infrastructure can boost a country's productivity while reducing commercial transportation costs. For instance, modernizing ports and upgrading the roads and railways system can reduce the cost of delivering raw materials and make distributing commodities between markets and ports easier. Additionally, efficient transportation is essential to developing the country's logistics sector. Myanmar is currently undergoing comprehensive reforms in all sectors, and the government, professionals from the logistics sectors, and the concerned agencies need to cooperate to improve the logistics sector. This way, the transport and logistics sectors will adapt to international requirements, and Myanmar's LPI ranking will grow in the coming years.

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# Questionnaire

## PART A

### 1. General Information

1. What is your gender?

Female

Male

2. How long have you worked for your organization?

2-5 years

5-10 years

Over 10 years

3. What is your education level?

Secondary Certificate

Diploma

Bachelor's Degree

Master

4. What is your occupation ?

Director

Logistics Manager

Driver

Customer

5. Which categories does your organization deliver?

Construction

Construction Equipment

Food & Beverage

Consumer Products

Pharmaceutical/Health Products

Hardware

Others (Specify) .....

6. Year of Establishment .....

## PART B

To what extent do you agree or disagree with the following statements? Tell us your opinion on scale of (1) Strongly disagree (2) Disagree (3) Neither disagree nor agree (4) Agree (5) Strongly Agree. Please ✓ the column to enter your answer.

### 2. (A) Logistics Strategies in Freight Transportation (Before Covid 19)

No.	Statement	1	2	3	4	5
1	In the firm, a primary objective of logistics is to effectively manage activities that result in distribution costs.					
2	The firm has good result in distribution.					
3	Management of the firm emphasizes internal and external system integration.					
4	Management of the firm emphasizes achieving maximum efficiency from distribution.					
5	The firm facilitates data integration among internal and external functions.					
6	Logistics department manages as a value- added system.					
7	Management of the firm strives to control cost drivers by managing material flows.					
8	The firm has Just in Time (JIT) replenishment.					
9	The firm has internal order checking.					
10	The firm has accurate order picking procedure that is important for logistics activities.					
11	The firm's transportation cost reasonable.					
12	Order picking/assembly procedure is important for customers.					
13	The firm uses IT in logistics function to reduce transaction costs.					



**2. (B) Logistics Strategies in Freight Transportation (During Covid 19)**

No.	Statement	1	2	3	4	5
1	In the firm, a primary objective of logistics is to effectively manage activities that result in distribution costs.					
2	The firm has good result in distribution.					
3	Management of the firm emphasizes internal and external system integration.					
4	Management of the firm emphasizes achieving maximum efficiency from distribution.					
5	The firm facilitates data integration among internal and external functions.					
6	Logistics department manages as a value- added system.					
7	Management of the firm strives to control cost drivers by managing material flows.					
8	The firm has Just in Time (JIT) replenishment.					
9	The firm has internal order checking.					
10	The firm has accurate order picking procedure that is important for logistics activities.					
11	The firm's transportation cost reasonable.					
12	Order picking/assembly procedure is important for customers.					
13	The firm uses IT in logistics function to reduce transaction costs.					

### 3. (A) Influencing Factors of Logistics Strategy (Before Covid 19)

<b>a.</b>	<b>Warehouse Management System</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1.	The cost of capital used for inventory decisions is the same as that used for other investment decisions.					
2.	The firm uses Material Requirements Planning that is important for inventory control.					
3.	The firm uses inventory value analysis to manage the inventory.					
4.	The firm has visibility and tracking information systems.					
<b>b.</b>	<b>Information System</b>					
1.	The firm's logistics information systems capability is better today than that of five years ago.					
2.	The firm is consistent in interdepartmental operating goals.					
3.	Relative to other areas within the firm, logistics share of information system resources has increased over the last five years.					
4.	The logistics information systems are satisfactory in terms of meeting firm's requirements in the firm.					
5.	Logistics information applications for order processing, selection and shipping within the firm are highly integrated.					
6.	The firm develop user friendly website to provide logistics matters.					
7.	The firm views IT applications as essential to increase competitiveness.					
8.	The percentage of transactions completed using IT has increased over the last five years.					
9.	The firm use bar code technologies that are essential to increase competitiveness.					

**(B) Influencing Factors of Logistics Strategy (During Covid 19)**

<b>a.</b>	<b>Warehouse Management System</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1.	The cost of capital used for inventory decisions is the same as that used for other investment decisions.					
2.	The firm uses material requirements planning that is important for inventory control.					
3.	The firm uses inventory value analysis to manage the inventory.					
4.	The firm has visibility and tracking information systems.					
<b>b.</b>	<b>Information System</b>					
1.	The firm's logistics information systems capability is better today than that of five years ago.					
2.	The firm is consistent in interdepartmental operating goals.					
3.	Relative to other areas within the firm, logistics share of information system resources has increased over the last five years.					
4.	The logistics information systems are satisfactory in terms of meeting firm's requirements in the firm.					
5.	Logistics information applications for order processing, selection and shipping within the firm are highly integrated.					
6.	The firm develop user friendly website to provide logistics matters.					
7.	The firm views IT applications as essential to increase competitiveness.					
8.	The percentage of transactions completed using IT has increased over the last five years.					
9.	The firm use bar code technologies that are essential to increase competitiveness					

**(B)** Please read the following statements and tell us your opinion on a scale of 1- (Poor), 2 - (Fair), 3 - (Good), 4 -(Very good), 5 -(Excellent). Please √ the column to enter your answer.

**(1) (Before Covid 19)**

No.	Statement	1	2	3	4	5
1.	Documentation process is smooth and quickly.					
2.	The items received is good in condition.					
3.	Customer service is good.					
4.	The firm can undergo according to clear guidelines and procedures for creating alliances.					
5.	The firm can undergo clear guidelines and procedures for monitoring alliances.					
6.	The status of delivery time is reliable.					
7.	The firm can negotiate with other departments, business units, and suppliers.					
8.	In the firm, a primary objective of logistics is to effectively manage activities that result in purchasing, manufacturing, and distribution costs.					
9.	The firm can get good results in purchasing and distribution.					
10.	Management of the firm can emphasize internal system integration.					
11.	The firm can facilitate data integration among internal functions.					
12.	The logistics function can provide advice to the marketing department.					
13.	The logistics department can manage as a value-added system.					

**(2) (During Covid 19)**

No.	Statement	1	2	3	4	5
1.	Documentation process is smooth and quickly.					
2.	The items received is good in condition.					
3.	Customer service is good.					
4.	The firm can undergo according to clear guidelines and procedures for creating alliances.					
5.	The firm can undergo clear guidelines and procedures for monitoring alliances.					
6.	The status of delivery time is reliable.					
7.	The firm can negotiate with other departments, business units, and suppliers.					
8.	In the firm, a primary objective of logistics is to effectively manage activities that result in purchasing, manufacturing, and distribution costs.					
9.	The firm can get good results in purchasing and distribution.					
10.	Management of the firm can emphasize internal system integration.					
11.	The firm can facilitate data integration among internal functions.					
12.	The logistics function can provide advice to the marketing department.					
13.	The logistics department can manage as a value-added system.					

## **PART C**

### **5. Challenges for Myanmar Road Freight Transportation**

1. What transportation and logistics challenges are the most critical for your customers?

- Capacity
- Compliance
- Cost reduction
- Customer service
- Data management
- Inventory management
- Labor
- Risk management
- Transport optimization
- Visibility
- Security

2. During pandemic, did your customers grow or shrink? About how much?

- up to 5%
- 0%
- Down 5%
- Down 10% or more

3. During pandemic, were profits up or down? About how much?

- up to 5%
- 0%
- Down 5%
- Down 10% or more

4. How is your organization currently affected by Covid-19?

- Not affected
- Slightly affected
- Moderately affected
- Significantly affected

5. Do you see any improvement in your organization compared with the situation one year ago?

- Declined compared to one year ago
- same as one year ago
- slightly improved
- moderately improved
- significantly improved

6. What aspects of your business are affected by the Covid-19 outbreak?

- sale decreases
- project delay
- supply chain disruption
- transport delay
- Human resource

7. What is your current cumulative impact of the Covid-19 on your organization?

- below 30% loss revenue
- below 30-50% loss of revenue
- above 50% loss of revenue

8. In 2020 and after, what changes do you expect in your business relationships with the customer company?

- Suspension of transactions
- Decrease in transactions
- No change in transactions
- Increase in transactions

9. Have funding difficulties delayed your company's or a business partner's payment?

(Select one.)

1. Funding difficulties have not affected payments
2. Payment from your company to a business partner (supplier of components and/or materials, goods, or services) has been delayed.
3. Payment from a business partner (who purchased goods or services) to your company has been delayed.

10. When do you expect business activities to return to the pre-COVID-19 pandemic level? (Select one.)

1. Already returned to normal
2. By the end of 2020
3. The first half of 2021
4. Second half of 2021
5. 2022-
6. No prospect of business activities returning to the pre-COVID-19 level

11. In your Opinion, is your organization able to operate according to the government preventive measures against Covid-19?

- Yes
- No
- No Opinion

\*\*\*\*\*

**THANK YOU**











