THE LOGISTICS SUB-SECTORS IN MALAYSIA:

Forging Ahead Together for Success

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Foreword from Malaysia Productivity Corporation (MPC)

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Director General

The logistics sector is important as a significant enabler for the country's trade and businesses. A well-developed logistics industry has an impact on most economic activities, with particular significance as a vital component in the supply chain, domestically and internationally. An efficient logistics system can improve a country's competitiveness, facilitate international trade, reduce cost of doing business and enhance its connectivity.

Since 2006, the government has classified logistics as a priority industry with several initiatives introduced such as the Third Industrial Master Plan (2006-2020), the Logistics and Trade Facilitation Master Plan (2015-2020), the Eleventh Malaysia Plan (11 MP, 2016-2020) and Twelfth Malaysia Plan (12 MP, 2021-2025). The 12MP aims to increase industry competitiveness and strengthen the institutional and regulatory framework of the sector. Transport initiatives were also streamlined through the introduction of the National Transport Policy (NTP), 2019-2030. The NTP's five policy thrusts and 23 strategies were set for the transport and logistics sectors as Malaysia aims to become a transport and logistics hub in the region by 2025.

This report outlines the various categories of the logistics sector, the economic characteristics in terms of performance and principal statistics of the logistics sub-sector activities. It identifies the various issues and challenges faced as well as the way forward. This study is an initiative by the Logistics Productivity Nexus (LPN) established under the 12th Malaysia Plan, comprising both public and private sectors to work together to increase the industry's productivity and competitiveness at the sectoral and enterprise levels.

I believe with further engagements and deliberations will allow the relevant authorities and industry players to design appropriate interventions and action plans to boost the industry further towards enhancing the competitiveness and efficiency of the logistics industry, bringing it up to global standards.

LPN Champion Statement

Dato' Seri (Dr) Michael Tio
Logistics Productivity Nexus Champion

The Logistics Productivity Nexus (LPN), is among the two new productivity nexus established under the Twelfth Malaysia Plan (12MP), in addition to the nine sector productivity nexus set up during the launch of the Malaysia Productivity Blueprint in 2017. Nexus plays an important role in public-private partnership in identifying issues that hinder productivity growth of the sector and sub-sectors.

The Logistics sector is expected to contribute 6.5% to the national GDP by the year 2030. The freight and logistics market in Malaysia was estimated at MYR 160.92 billion in 2020, and is expected to reach more than MYR 221 billion by 2026 at a CAGR of more than 4% during this forecast period. Indeed it is our aspiration to expand a global footprint and promote the internationalisation of our transport services. We look forward to Malaysia to emerge as the leading ASEAN logistics hub and the preferred logistics gateway to Asia.

However with the fast evolving global competitive landscape at local, regional and global levels, the logistics industry in Malaysia, albeit its potential, has much room for improvement. We need to address many underlying issues to create a conducive and robust ecosystem for the logistics industry to enhance its productivity and competitiveness.

We appreciate the publication of this report as it has reviewed the characteristics of the various logistics sub-sectors and identified several key issues related to Institutional and Regulatory Mismatch, Processes and Procedures in Cargo Clearance, Inefficient Road Connectivity Network, Incompetence & Unskilled Manpower and Low Adoption of Digitalisation. These will provide useful insights for further discussion, analysis and engagement with various industry players and authorities. Through strategic planning, smart co-operation and commitment, we will be able to forge ahead for success.

1. Abbreviations and Acronyms

3PL	Third Party Logistics provider
AEC	ASEAN Economic Community
AEO	Authorised Economic Operators
AMEC	Association of Malaysian Express Carriers
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of South East Asian Nations
AWB	Airway Bill
B/L	Bill of Lading
BDM	Laden Weight- GVW (Berat Dengan Muatan)
BTM	Unladen Weight - ULW (Berat Tanpa Muatan)
BGK	Combined Vehicle Weight (Berat Gandar Kenderaan)
BG(1)(2)(3)	Gross Axle Weight Rating - GAWR (Berat Gabungan Kenderaan)
BK	Kerb Weight (Berat Kerb)
C/N	Consignment Note
CTU	Cargo Trade Unit (code)
DOS	Department of Statistics
EU	European Union
(e)PCO	(Electronic) Preferential Certificate of Origin
FCL	Full Container Load
FTL	Full Truck Load
GVW	Gross Vehicle Weight
HBL	House Bill of Lading
IATA	International Air Transport Association
ICC	International Chamber of Commerce
ILO	International Labour Organisation
IMO	International Maritime Organisation
ISO	International Standard Organisation
IWT	Inland Waterways Transport
LCL	Less Than Containerload
LTL	Less Than Truckload

MCMC	Malaysian Communications and Multimedia Commission
MITI	Ministry of International Trade & Industry
MOF	Ministry of Finance
MOT	Ministry of Transport
MPC	Malaysia Productivity Corporation
OECD	Organisation for Economic Cooperation and Development
PTL	Partial Truck Load
PKA	Port Klang Authority
PKFZ	Port Klang Free Zone
RFS	Road Freight Service
SME	Small and Medium Enterprise
WTO	World Trade Organisation
WCO	World Customs Organisation
NVOCC	Non-vessel Owner Common Carrier
VAS	Value-added Services
UNECE	United Nations Economic Commission for Europe

1.1 Glossary of logistics, transport and supply chain terms

TERMS	MEANING
Abandonment	When a carrier has decided to discontinue service over a routing or advertised service.
Abnormal Demand	Demand that exceeded the limit originally established, usually when there is intake of new customer or change of customer behavioural pattern.
Absorption Costing	In costing, variable costs are added to the fixed cost, on the basis of direct elements involved, to generate a new costing approach.
Accessory	A new added choice or feature added to the goods or services originally offered to customer in enhancing its product or service offering.
Accountability	When a work process or task is assigned, the completion of the output has to be answered.
Accreditation	In recognising as competence, identified work processes or systems undertaken to be certified by a certifying organisation, to its capacity, objectivity and standardisation.
Activity	Work processes, occurring in sequence, undertaken by people, equipment, technologies or facilities.
Activity Analysis	A process in the identification and documentation of activities for an overview of in-depth understanding.
Costing (ABC)	A measure where the cost and performance of a activity is taken that consume the cost objects and its resources, direct and indirect.
Activity-Based Costing Model	A model used in activity-based costing of resources, by time period, related to products or services.
Activity-Based Management	An activity focused system of management with an identified business process to continuously improve in value creation, to customers and company profitability.

TERMS	MEANING
Activity Dictionary	A documented manual where a list of identified and recognisable activities, showing the definition of the activities and predefined data elements linking to subsequent activities.
Activity Level	A description of the activities in relation to its functional area.
Activity Network Diagram	A detailed diagram documenting the specified processes or system, usually using an arrow-based with different rows or column known as “swim-lanes”.
Advanced Shipping Notice (ASN)	Information with detailed shipping information (such as cargo, time of departure, time of arrival) are transmitted to a customer or recipient of cargo in advance, usually in EDI electronic format.
Air Cargo	Goods transported by air mode.
Air Suspension System	The kind of suspension which uses air instead of leave-spring and reduces the spring effect on the trucks.
All-Cargo Carrier	An air carrier which exclusively transports cargo only.
Alternate fuels	Refers to the fuels or power sources which serve as a substitute for fossil oil in the energy supply to transport which contribute to efficient environmental protection and decarbonisation, such as electric-powered, hydrogen, LPG and LNG.
Alternate Routing	Routing is different from its originally planned route. This term is normally used by freight carrier but can be used in computerised routing of data.
Anticipation Inventories	An additional inventory created on top of the usual stock level, in order to meet the projected trends of increased sales, seasonal fluctuations or planned sales promotion campaigns.

TERMS	MEANING
Anti-Dumping Duty	In order not to cause injury to the domestic market, a country may elect to impose an additional import duty on the goods where the imported goods are priced lower than its normal price in the exporting market.
Articulated Vehicle	A transport vehicle which consists of the prime mover and a trailer which is attached to the former.
Automated Guided Vehicle System (AGVS)	A system of networks that automatically guide the handling and transport devices, such as carts, pallet and picking trucks, to and from pre-determined positions in a warehouse with any operator intervention.
Available Inventory	The inventory that is available to be utilised for ordering or picking, minus all prior allocations, reservations, backorders and also quality held for investigations. Also known as Beginning Available Balance or Net Inventory.
Average Inventory	Average level of inventory over a period of time. Period of time is usually pre-defined, such as two-week period, 30-days period or even hourly period. This term is usually used for reporting purposes.
Back Order	When an order runs out of stock, this order is taken as "keep-in-view" for shipment when the product becomes available.
Backorder	An act of retaining a quantity to ship against an order when other order lines have been shipped.
Back Haul	When the original forward transportation trip is completed at destination and the process of carrying back from the destination to the original point is known as backhaul.
Base Stock System	A system of inventory where re-stocking is carried out as and when a stock withdrawal is performed, which means the order quantity is the same as the replenishing quantity. Also known as "par-stock system".

TERMS	MEANING
Belly Cargo	A term used when the air cargo is carried in the belly of passenger aircraft, sharing the carrying capacity of the aircraft.
Benchmark	A measured process for "Best-in-Class" achievement, usually a reference standard for performance level of excellence for a specified process or activity.
Best Practice	A specified process or activity that has been recognised as the best possible method for performing it.
Bill of Activities	For a product or service requirements, a list of activities that are warranted for its output.
Bill of Lading (BL)	A transport document issued by a carrier to the shipper of the goods, which contains the terms and conditions of the carriage.
Bill of Material (BOM)	A list of materials, components or parts with the required quantity needed to produce a particular product, whether sub-assembly or semi-manufactured.
Bin	A storage compartment designed to hold small components. Also known as the identification storage unit in a warehousing in order to differentiate different storage locations.
Blanket Order	An order to the supplier for materials or products, with a long commitment against multiple deliveries, either with predetermined dates or quantities.
Bonded Warehouse	A warehouse generally under the control of Customs approved for the storage of goods under bond, where duty has not been paid yet.
Break-bulk	The act of separating of a single consolidated bulk load or container into smaller shipments for delivery to consignees.

TERMS	MEANING
Broker	A person who acts as an intermediary between the shipper and the carrier. Such person who acts between the shipper/consignee and customs is called the customs broker, while acting between the shipper and the carrier is known as freight broker or freight forwarder.
Bullwhip Effect	A sudden change in the position in the upstream supply chain caused by a small demand change in the downstream supply chain.
Business Continuity Plan (BCP)	A contingency plan required to sustain the operationalisation of a company when faced with unexpected disaster, like fire, flood or even labour unrest.
Business Logistics	The totality of activities that are systemic and coordinated to ensure the transport and storage of goods from supplier/vendor (e.g. such as packaging, order processing) through the available facilities to the customer or marketplace in an efficient manner to achieve the company's objective.
Business Performance Measurement (BPM)	A strategic system that uses a network of goals and metrics in the monitoring of the performance, usually analysing the collected measurements and feedbacks.
Business Process Outsourcing (BPO)	The act of outsourcing certain internal functions to an external third party. Such functions that are usually outsourced are logistics, payables, receivables, payroll and human resources and sometimes the development of IT or maintenance of IT.
Business Process Reengineering (BPR)	Subjecting the business processes of the enterprise to a radical rethinking in order to achieve redesign of business processes for organisational improvements.

TERMS	MEANING
Business-to Business (B2B)	Conducting business with the external customers using web-enabled technologies and the internet.
Business-to-Consumer (B2C)	Unlike B2B, B2C is targeting the consumers using the web technologies and the internet, selling directly and fulfilling the order, using third party service providers.
Cabotage	A national law that restricts foreign operators to offer their services in the country, unless permitted by license. Such cabotage restrictions include coastal shipping, air traffic rights and domestic trucking.
Cage	A device with secure enclosed compartment for storage highly valued or hazardous cargo.
Capacity	Generally refers to the maximum output or producing ability of a machinery, process, service limit, person or even a factory.
Capacity Management	The understanding of capacity for each level in a system which includes processes, activities, resources and market segments.
Capacity Planning	Ensure that the necessary resources are available at the right time and in the right place to meet logistics and supply chain reqirements.
CAPEX	Abbreviation for Capital Expenditure, the monetary requirements for the early investment in machinery or equipment.
Carrier	An enterprise that undertakes to transport goods or people, either by land, sea or air.
Category of Roads	Roads are categorised according to 3 internationally comparable types: (a) Motorways, (b) Road inside a built-up area and (c) Other road (outside built-up area).
Certificate of Analysis (COA)	A certificate attesting to the conformance to quality, standards or specification compliance.

TERMS	MEANING
Certificate of Compliance	A certificate, usually issued by the Supplier or Service Provider, confirming meeting the specifications specified.
Certificate of Origin (COO)	A certificate providing the origin of the goods, in terms of country of production.
Change Management	The process that coordinates and monitors any changes to business or application processes in the organisation to minimise any risks that may affect the operating environment and the delivery of service to users.
Change Order	A notification from a customer that the earlier order is requiring a change, which may involve the quantity, delivery dates or specifications.
Changeover	A process where adjustments or changes are required to switchover the type of products produced on a manufacturing line.
Chock	A wedge device, usually made of hard rubber, wood or even steel, to be placed under the wheel of a truck or even any cargo that may subject to rolling, wedged.
CLM	A professional body based in US, Council of Supply Chain Management Professionals. Formerly known as the Council of Logistics Management.
Cluster Picking	A methodology used by warehousemen in picking orders into multiple order bins at the same time.
Co-Managed Inventory (CMI)	A technique for continuous replenishment of inventory by the supplier or manufacturer on behalf of the customer. Also known as Vendor Managed Inventory (VMI).

TERMS	MEANING
Collaborative Planning, Forecasting & Replenishment (CPFR)	A highly organised system in which all supply chain partners are jointly involved in supply chain activities, from business planning to sales forecasting to all operations involved in planning the delivery of raw materials to production and the delivery of final products to end customers.
Commodity Rate	A freight rate for a specific commodity from a specific origin-destination.
Common Carrier	A carrier that accepts goods from the general public for carriage, with no differential treatment in terms of rates, liability and service provided.
Confirming Order	An informal purchase order to supplier before the issuance of the usual Purchase Order.
Consignee	The party to whom the goods that are shipped, to be delivered to. The party is the receiver of the goods.
Consignment	A shipment that is handled by a carrier.
Consignor	The party who originates a shipment of goods. Also known as the shipper.
Consolidation	The act of combining various small shipments to achieve lower transportation rates.
Container Security Initiative (CSI)	An enhanced container security programme initiated by the US Customs Services to prevent global containerised cargo from being exploited by terrorists.
Contract Carrier	A carrier who concludes a transportation contract with a shipper, with specified terms and conditions.
Cost of Goods Sold (COGS)	The cost that involved direct materials, direct labour, overhead allocated cost during a period of time for the product sold.

TERMS	MEANING
Cross-Docking	A distribution system in which goods received at the warehouse are not put-away into storage but prepared for shipment by another truck synchronised for the pickup and delivery.
Cross-Trade	Refers to international road transport between two different countries carried out (in-transit) by a road vehicle registered in a third country. A third country is neither the country of loading nor the country of unloading.
C-TPAT	Abbreviated: Customs-Trade Partnership against Terrorism. A joint Customs/Business initiative to build cooperative relationships that strengthen overall supply chain and border security.
CTU Code (Cargo Transport Units Code)	The CTU Code is a joint publication of IMO, ILO, UNECE, a guideline for packing of cargo transport units, a global code of practice for handling and packing of shipping containers for transportation by sea and land.
Currency Adjustment Factor (CAF)	Currency Adjustment Factor – an added surcharge by carriers for currency exchange risk.
Dangerous Goods	The classes of dangerous goods carried by carriers are those defined by the UN Recommendations on the Transport of Dangerous Goods. There are 9 classes defined under the Recommendations.
Demand Planning	The process of identifying, aggregating, and prioritising, all sources of demand for the integrated supply chain of product or service at the appropriate level and interval.
Demand Pull	An action that triggers the start of material movement to a workstation only when that work task is ready to start the subsequent job.
Demurrage	A charge levied when a container and ship are retained beyond a specified loading or unloading time.

TERMS	MEANING
Depot	A place where an item, raw material or finished goods, are stored, usually for later activities. A repair depot is a place/facility where assets are rebuilt or repaired. An empty container depot is a place/facility where empty containers are stored or repaired.
Detention	A fee usually levied by a carrier when the containers or trucks are retained beyond a specified loading or unloading time.
Direct Store Delivery (DSD)	A process of whereby goods are delivered directly from a manufacturer's facilities or a distribution centre to the customer's retail stores, thereby bypassing the customer's distribution centre.
Distribution	The activities involved in moving materials, usually finished goods or service parts, from the manufacturer to the customer. These include the functions of transportation, warehousing, inventory control, material handling, order management, site and location analysis, industrial packaging, data processing and the communications required for effective management associated with physical distribution, and the return of goods to the manufacturer.
Distribution Centre	A facility, usually a warehouse, where manufacturers' supplies are kept awaiting instructions for distribution to the customer's stores.
Distribution Planning	The activities associated with planning transportation, warehousing, inventory, materials handling, order management, site planning, product packaging, data processing and communications to achieve effective distribution.
Dock-to-Stock	An activity that ensures that a product's specific quality and packaging requirements are met before it enters the retail market. This ensures that costly processing operations (receiving and inspection) are avoided, especially when it goes directly into production.

TERMS	MEANING
Dock Receipt	When the consignment is handed over to a carrier or its contractor, a receipt shall be issued stating that the consignment is in the custody of the carrier or its contractor.
Drop Ship	The supplier delivers to another or from the supplier delivering directly to the buyer's customer on the buyer's instructions without actually handling, storing or shipping the goods.
Drop	An action in which a facility operator places a trailer or semi-trailer at a facility for loading or unloading.
Dumping	An action where the seller offers his goods at a lower price in the selected market.
Dunnage	Certain packaging materials are used to protect a product from damage (due to movements) during transport.
DUNS	Abbreviation for Data Universal Numbering System.
Enterprise Application Integration (EAI)	The Applications designed to enable integration of computer systems and applications across an enterprise.
European Article Numbering (EAN)	See also GS1. A defined numbering scheme to uniquely identify retail products.
EAN.UCC	Means European Article Numbering/Uniform Code Council, which provides the global standards for uniquely identifying trade items, logistics units, locations, assets and service relationships.
Electronic Data Interchange (EDI)	Electronic Data Interchange means the transmission of business information, usually from computer-to-computer, in a standard format.

TERMS	MEANING
Efficient Consumer Response (ECR)	Efficient Consumer Response, a system that links all parties in a logistics chain to create an efficient, end-to-end distribution network using consumer demand and point-of-sale information.
Electronic Commerce	Generally referred to as e-commerce and refers to the conduct of business electronically, using either traditional EDI or online web technologies over the Internet.
Electronic Fund Transfer (EFT)	A computerised system that facilitates the transfer of funds for the payment of bills and other financial transactions.
Electronic Signature	For authentication in identifying a person or an organisation, using the electronic authorisation code.
Electronic Product Code (EPC)	A system for identifying product codes, either RFID tags or other means.
End-of-Life Inventory	Existing inventory that has reached the end of its useful life, i.e. is no longer in production.
Expressway	Similar to freeway, expressway also serves adjoining properties, except that it is accessible via an interchange or controlled junction.
Export Processing Zone (EPZ)	A legally defined area in a country where activities can be carried out without the normal barriers to trade such as tariffs and quotas. Generally, duties and taxes are suspended on all goods brought into the zone. Also known as Free Trade Zone (FTZ), Free Industrial Zone (FIZ), Free Commercial Zone (FCZ) and Special Economic Zone (SEZ).
Freeway	Road specially designed and built for vehicular traffic that does not serve properties adjacent to it.
Facilities	A physical plant, distribution centre, service centre, depot and associated machinery and equipment.

TERMS	MEANING
Fill Rate	The measure of order item picking operations within a given time period.
First In, First Out (FIFO)	A term used in the warehousing sub-sector where stock that is put away first is also picked first.
Fixed-Location Storage	A fixed place in a storage location (warehouse) designated for the storage of an item.
Flag of Convenience	A country offering registration of a vessel where taxation of the vessel's revenue is negligible or zero.
Flat	A platform intended for the loading of cargo, without any lateral infrastructures, generally as a shipping unit such as a container.
Flow-Through Distribution	A storage activity in which products are transported from multiple locations to a distribution centre where they are re-sorted by delivery destinations and delivered the same day.
Forklift truck	A machine used to lift and lower palletised goods, usually for loading and unloading trucks.
Fixed Assets	Refers to a long-term tangible asset or equipment that is owned and used in the business to generate income.
Free Time	The period of time allowed for the removal or loading of cargo, before any charges or fees become applicable. Such charges or fees are known as Demurrage or Detention charges.
Freight-all-Kinds (FAK)	Generally, freight rates are quoted basing on commodity or destination but when there is no such reference, the rate become freight-all-kinds.

TERMS	MEANING
Freight Consolidation	When small volume cargoes are grouped together to achieve reduction of transport cost or improved utilisation of space for transportation.
Fulfilment	The action in complying to a customer's order, which includes order management, picking, packing and shipping.
Gap Analysis	In determining the variance (gap) between the current performance and the original goals.
Gateway	The connection allowing the flow of messages between two separate network of systems.
Global Location Number (GLN)	Refers to a unique number to identify a location or facilities.
Global Commerce Initiative (GCI)	An initiative to bring together manufacturers and retailers on a global basis, to improve their consumer value in the retail supply chain by adopting EAN.UCC standards and best practices.
Global Trade Item Number (GTIN)	A unique set of numbers (up to 14 digits) that is used to identify a product or service upon which it can used to retrieve further information from a predefined database.
Good Manufacturing Practice (GMP)	A system, consisting of processes, procedures and documentation that ensures products, such as food, cosmetics and pharmaceuticals, are consistently produced and controlled according to quality specifications.
Goods Received Note (GRN)	A receipt note raised by the recipient of products or materials, usually at delivery times.
Gross Inventory	The value of an inventory, usually valued at cost, before deducting any allowance for its excess or obsolete items.

TERMS	MEANING
Gross Output	Principally a measure of adding the organisation's value added and intermediate inputs.
Gross Weight of Goods	The total weight of goods carried, including packaging but excluding the tare weight of the transport unit (e.g. containers, pallets for containing goods).
Handling Cost	The overall cost that includes the cost of moving, transferring, preparation and handling of the inventory.
Hazardous Material	A material or substance, which has been classified by the relevant government agencies, capable in posing a risk to health, safety and property when stored or transported together. See Dangerous Goods.
Hub	A reference to a central point within a transportation network, where all activities are focused at, from the peripheral facilities.
Hundredweight (CWT)	A unit of measure for weight which is equal to 100 pound or 50.8 kilogrammes.
Hyperlink	A computer term where it refers to another page when clicking on the hyperlink.
Hyper Text Markup Language (HTML)	A standard computer language for describing a content or an appearance of pages, on the internet world wide web.
Hyper Text Transport Protocol (HTTP)	An internet protocol that allows the web browser to retrieve information from an external server connected to the internet.
Intermediate Inputs	Goods or services, other than fixed assets, used as inputs into the production process of a company that are produced elsewhere, which is either transformed or used up by the production process.

TERMS	MEANING
International Air Transport Association (IATA)	An international organisation for Air Transport Operators, like airlines or cargo operators.
International Chamber of Commerce (ICC)	Is a world business organisation, enabling business to secure peace, prosperity and opportunity for all. It aims to promote international trade and investment as vehicles for inclusive growth and prosperity.
In-Bond	Goods stored or transported under customs control, duty and tax suspended, until goods are cleared for home use.
Inbound Logistics	The movement of materials from suppliers and vendors into the production processes or storage facilities.
Incoterms	Set of international terms of sale developed by ICC to define seller and buyer responsibilities.
Indirect Cost	An activity cost and overhead that cannot be identified prior to the final costing of a product or service.
Inland Carrier	A carrier that offers transport service from and to locations within a country.
Insourcing	Performed in-house. Opposite of Outsourcing.
Integrated Logistics	A system where all activities of the entire supply chain, from the supply of raw materials through to the distribution of finished goods, are taken to be as a single process with a single management entity and any external functions are also deemed fused with the single process.

TERMS	MEANING
Integrated Services Digital Network (ISDN)	A network encompassing the entire computerised environment connecting the devices and equipment designed for transmission of data, voice, images and videos using an integrated broadband link with connection band speed of 144 kbps to 2 Mbps.
Intellectual Property (IP)	Property of an individual or enterprise maintained in digital form, such as music, programme source codes, videos or digital contents.
Intermodal Transportation	Transportation where the modes are switched from one mode to another.
International Standard Organisation (ISO)	An non-governmental organisation that comprises of standard bodies from more than 160 countries, where they collaborate in the development and promotion of international standards for technology, processes, working conditions, societal issues and many more.
Inventory Management	The process of administrating the activities where inventories are monitored to ensure availability at the right level to meet requirements.
Inventory Planning Systems	A system that assist in the strategic process of balancing of inventory turnovers and customer service levels throughout the period of supply chain planning.
Inventory Turns	The measure of the number of times an inventory has been sold (turned over) during a period of time.
Java	A computer programming language, generally used for web-based applications.
Just-in-Time (JIT)	A comprehensive control system that activates the flow of materials into the assembly or manufacturing plants by way of coordinated demand and supply, to the point where the required materials arrive at the assembly or plant just in time for its usage.

TERMS	MEANING
Kaizen	A Japanese system of quality management using the strategic process of involving everyone, from manager to workers, for continuous improvement.
Kanban	A Japanese term for “visible record”, where components are delivered using standard containers or lot sizes to assembly line “just-in-time” to be used.
Key Performance Indicator (KPI)	A measure, which is of strategic importance, of a process, activity or even output of a department or company, using specially designed & formulated matrix.
Kitting	Light assembly of components or parts into defined units, prior to be put into main production process.
Land-Bridge	The activity of moving containers by railroads from a seaport to another seaport for onward delivery by another vessel. Example: Containers from East Coast ports in US to the West Coast ports.
Landed Cost	Cost of product with additions of the relevant logistics costs such as transportation, customs clearance, duty & taxes, warehousing and handling.
Lead Time	The total time taken between when an order is placed and its receipt, which includes time for order transmittal, order processing, order preparation and transit.
Less-Than-Containerload (LCL)	Shipment that is less than a container load, usually accepted by a carrier for consolidation.
Less-than-Truckload (LTL)	Shipment load that is less than a truck load and trucking company will accept such shipments using a network of depots and collecting stations.
Last In, First Out (LIFO)	A term used in warehousing sub-sector, where inventory that is last stored are the first to be picked.

TERMS	MEANING
Lift-On Lift-Off	An operational term used to indicate an activity when a container is lifted onto a truck or ship and subsequently lifted off the truck or ship, using mobile cranes or ship's derrick.
Lift Truck	A vehicle that is used to lift, move, stack or rack a load of cargo, usually on a pallet.
Line Functions	A functional decision-making associated with operations, where such functions in a logistics line include traffic management, order processing, warehousing and packaging.
Line-haul	A shipment between facilities that are over 100 to 200 kilometres.
Liner Service	International shipping services between fixed ports and their schedules are published.
Long Ton	A measure unit that is equal to 2,240 pounds or 1,016.05 kilogrammes or 1.016 metric tonne.
Logistics Management	Defined by CSCMP: Logistics management is that part of the supply chain management than plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements.
Manifest	A document that describes the individual shipments that is contained within a shipment.
Master Production Schedule (MPS)	The top level schedule used to generate the production plan in a manufacturing facility.

TERMS	MEANING
Material Safety Data Sheet (MSDS)	Prepared by the manufacturer, this document describes the hazardous material component of a product, with the objective to provide information for the handling, storage and disposal, usually the safety and chemical properties of the materials.
m-Commerce	An application for carrying out financial transactions, using a mobile phone.
Measurement Ton	A measurement of volume which equals to 40 cubic feet or 1.133 cubic metres.
Message	A set of information, organised in structured segments, exchanged by trading partners using computerised devices.
Milk Run	A regular truckload for delivery or pickup of various small lots to/from supplier(s) or recipients.
Minimum Weight	A shipment weight specified by a carrier as the minimum weight required to qualify for the unit chargeable rate.
Net Asset Turns	A measure to show how many times (turns) the net assets are replenished in your annual sales cycle.
Node	A fixed and assigned point in the logistics system where goods can be temporarily positioned, which can include warehouses, supply sources, interim store-houses and even manufacturing plants.
NAFTA	North American Free Trade Agreement, a free trade agreement which came into effect on 1 January 1994 between Canada, United States of America and Mexico.
Original Equipment Manufacturer (OEM)	A manufacturer that buys from another supplier/ manufacturer and incorporates into its own line of production or product lines.

TERMS	MEANING
On-Demand	The act to commence production when the demand has arises.
On-Hand Balance	The reported quantity in the inventory system showing the stock is physically in stock or available.
On Time Delivery	A metric which is defined as the percentage of goods received by the customers on time as specified.
Outbound Logistics	The process where the products from the end of the production line is moved and stored to the customers.
Packing List	Part of a shipping document, this list provides the information of the merchandise shipped, showing the package number, gross and net weight of the merchandise, and all other details related to the shipment.
Pallet	The platform, usually made of wood, where cartons are stacked on and used for movement of goods.
Peak Demand	The period of time during which the quantity demand is greater than any other comparable period of time.
Performance Measures	A measurable indicator which measures work performed, which includes any identified activity, process or even on a specific unit of a company or group of companies.
Preventive Maintenance (PM)	Activities carried out on a regular and scheduled basis on equipment, in order to reduce or eliminate unexpected failures and downtime.
Process	A series of activities that are associated to complete a specific output.
Productivity	A measure of efficiency defined as the sum of the total output over the sum of total input.

TERMS	MEANING
Put Away	The activity that is associated with the removal of goods from the dock or any other location where goods are received, transferring to the staging agrea before moving into specific location, on racks or bays, and recording where the goods have been placed.
Quality Control (QC)	A management function that ensures all services or products are performed or produced met the specifications as listed in the quality manual.
Quick Response (QR)	A strategy which is partnership-based, between manufacturers, retailers, service providers, to reduce out-of-stock, forced markdowns an operating expenses, using the shipping accuracy and reduced response time approach.
Rack	A storage device that provides storage space for pallets in a vertical and horizontal configuration.
Radio Frequency Identification (RFID)	A form of identification capturing by using a wireless communication that allows the user to relay the information captured using a terminal to a base station which is in turn linked to a host computer.
Receiving Dock	The place in a distribution warehouse where the goods delivered by a truck is physically received.
Reefer	A term also used for refrigerated vehicles.
Replenishment	A process of moving or re-supplying inventory from a upstream storage location (usually the reserve) to the downstream storage/picking location (primary or production).
Request for Quote (RFQ)	A document used to invite vendors' responses when a product or service are needed from several vendors.

TERMS	MEANING
Reverse Logistics	Another segment of logistics which concern the movement and management of products after the sales and goods have been delivered to customers.
Road Freight Transport, National	A road transport between two places (a place of loading and a place of unloading) located in the same country by a vehicle registered in that country.
Road Freight Transport, International	A road transport between two places (a place of loading and a place of unloading) in two different countries irrespective of the country in which the vehicle is registered.
Road Transit Transport	Road transport through a country between two places (a place of loading and a place of unloading) both located in another country or in other countries provided that the total journey within the country is by road and that there is no loading and unloading in that country.
Roll-On, Roll-Off (RORO)	A ship designed to allow rolling stocks (like tractors, trucks, cars, dolly) to be driven into at the origin and driven off at destination.
Service Level Agreement (SLA)	A document in representing the terms of the performance based activities, usually for the measurement of the level of the agreed service performance.
Special Economic Zone (SEZ)	A region which is specially created within a country that has economic laws that are more liberal than the country's economic laws. Similar names like Free Zone, Export Processing Zones, Free Inland Ports have similar privileges.
Stock Keeping Unit (SKU)	A unique referencing scheme designed to identify a particular item or product held in inventory.

TERMS	MEANING
Tare weight	The weight of a transport unit (e.g. container, pallets for containing goods) before any cargo is loaded into the unit.
Tasks	The elements of the work process within an activity.
Total International Transport	Refers to the loaded, unloaded, cross-trade and cabotage transport volume reported by hauliers registered in the country, completely or partially, outside the country.
Type of cargo carried	Goods in transport may be classified according to the Recommendation No 21 of the UNECE – Codes for types of cargo, packages and packaging materials.
Unitisation	In cargo handling, the act of aggregating several smaller units into a larger unit for ease of handling.
Unit of Measure (UOM)	A unit in which a quantity of an item is measured, for example kilogram for weight measures or meter for length measures.
Upcharges	When charges are raised, to cover additional costs that were not envisioned when the original contract was concluded.
Upstream	Generally refers to the supply side of the supply chain.
Urban Road Transport	Road transport carried out on urban roads or tramways.
Value Added	Increasing or further improving the value, worth, functionality or usefulness.
Value Chain	The combination of the series of activities that would eventual define a business process which further produces the business supply chain.

TERMS	MEANING
Visibility	The ability to access and view the crucial data or information where it concerns the performance of the logistics and the supply chain.
Vendor Managed Inventory (VMI)	A system where the suppliers of goods to manufacturers would take the responsibility to determine the quantum and timing of replenishing the inventory required by the manufacturers, where the goal is to increase inventory turns and reducing stock-outs.
Waybill	A transport document showing the description of the goods, packages, destination, consignee/consignor which is part of the transport contract.
Weight Confirmation	The action where the weight is confirmed by way of the validating weight receipt.
Work-in-Process (WIP)	Activity where parts and sub-assemblies are in the process of becoming finished products.
Warehouse Management System (WMS)	A system used to effectively manage the warehousing business processes, where its activities, receiving, putaway, picking, shipping and inventory count, are directed from.
Yard Management System (YMS)	A system designed to facilitate the organising of all incoming and outgoing trucks and trailers for the staging or parking of the trucks and trailers in an open yard immediate to the warehouse, in which the trucks and trailers would be subsequently docked at, for the eventual loading and unloading of cargoes.
Zone Picking	A technique in item picking where a picking list is sub-divided by areas within a warehouse for efficient rapid order picking.

2 Background

Logistics plays an important role in increasing a country's economic share in the global value chain. The term "logistics" is now commonly used to describe the activities of packaging, transporting, storing and handling products as the raw materials move through the production channels and finally to the point of consumption or sale.

Basically, the various activities of logistics have contributed to economic development and social welfare over the past centuries, but it is only in the last 50 years that we have officially considered logistics as an important factor in promoting trade and business performance of a country and as a professional discipline that warrants extensive research and study in the field of logistics.

Over the past two decades, there have been increasing calls from the public and government agencies to focus more on the potential impacts of logistics. This has been accompanied by a shift in focus from asset-based to activity-based logistics and a shift in attention from more traditional activities such as land transport, seaports and airports to more regional activities such as trade-based connectivity, cross-border transit transport and multimodal business models.

Recent WTO and WCO trade facilitation initiatives are not being fully implemented by business communities. This is mainly because government authorities do not exactly know how to achieve the necessary institutional reforms or adjustments to support these initiatives.

This understanding should first be derived from the basic requirements of trade and logistics. For example, land transport was primarily limited to domestic transport of goods and there were no adequate links to all

neighbouring ASEAN member states such as Thailand, Cambodia, Vietnam and the Lao People's Democratic Republic. With the exception of Singapore, where our trucks can cross the border due to our bilateral agreements. Unfortunately, road transport activities in Malaysia is still underdeveloped in terms of connectivity and multimodal links.

Recently, rail transport has become more important with the opening of the rail link between China and Lao PDR late last year, although ASEAN countries have been talking about the Singapore-Kunming rail link for a long time. This link has attracted the interest of foreign investors as rail transport has always been the cheapest form of transport. Many foreign logistics companies have jumped on the bandwagon and offer joint services with local logistics companies.

Multimodal transport activities have existed in Malaysia since the advent of containerisation, but these types of activities have been limited to foreign players from the beginning, with most operators coming from Europe, Singapore and Taiwan. Even today, most of the multimodal transport companies are either joint ventures or wholly foreign-owned. Government authorities seem to lack understanding of this type of activity. There is also a lack of local air freight forwarders in the country, even though our air freight industry is growing every year. Again, most air freight forwarders currently operating in Malaysia are foreign-owned or controlled. Cargo is consolidated here and then transported to a foreign hub from where it is forwarded via other modes, such as road and rail.

The potential of our local logistics companies is extremely high, but due to the extremely competitive environment created by foreign companies that have been operating in Malaysia for a long time, the opportunities for them to enter the industry are rather difficult at the present moment. However, the right approach by government agencies and institutions to reshape the regulatory framework and the necessary policy adjustments can stimulate local logistics companies to incrase their business activities to reach the same level of competition as foreign-owned or controlled logistics companies.

3. Categories of the Logistics Sector

In general, the following categories of the logistics sector can be easily identified from the basic characteristics of its activities. While there are many types of activities that the logistic companies offer in their range of services, for better understanding it would be better if the different types of activities of these logistics providers were divided into identifiable segments. As mentioned earlier, the activities are best grouped as follows:

The transport of goods, including road, rail, inland waterways and maritime transport.

Forwarding business, including customs clearance, freight consolidation and NVOCC.

Warehousing, including cold storage and bonded warehousing.

Small parcel delivery, including courier and e-commerce delivery services.

The VAS sub-sector, including all other specialised services related to cargo handling.

Although customs clearance activity is one of the important sub-sectors of the logistics industry, the author has chosen not to include this activity in this report as it is very complex and multi-layered and should therefore be dealt with separately in order to provide a more comprehensive overview of this sub-sector.

3.1 1 Transport of Goods

In the transportation segment of this logistics sector, there are principally five modes of transport which involves the transportation by i) road, ii) rail, iii) water, iv) air and v) pipelines. The first two modes are fundamentally land-based transport whilst water mode is primarily confined to maritime (sea) but also includes inland waterways. Air mode essentially involves the transportation by air between airports. When compared to the maritime (sea) mode, air mode generally takes up a small percentage of the freight traffic volume but its economic value of the freight carried is far greater than the maritime (sea) mode. It should be noted that the bulk of freight transport in a country are carried by the maritime (sea) mode (as much as 80%). The mode by pipelines involved mainly major projects like transportation of oil (mostly crude oil), water for human consumption and natural gas. Such transport mode is usually regulated and managed by the public authorities, where in such case, the private sector is barred to participate in this area of activity.

3.1.1 Road freight transport

Road freight transport is the movement of goods from one place to another (where there is a place of loading and a place of unloading) by motor vehicles over a road network. With the introduction of trade, road freight transport has developed commercially, with the transport of goods being organised on a business basis by logistics companies or freight forwarders. Intra-company freight transport is also organised by these companies themselves, such as the transport of semi-finished goods or parts between different locations for their internal production processes, which can be classified as non-commercial freight transport but as part of their supply chain processes.

By land, road freight transport generally involves the movement of goods between different production plants and between independent trading houses and consumers in general. It does not matter whether the goods are delivered in bulk or in pre-packaged units that may require special handling procedures, e.g. temperature controlled or hazardous goods.

In today's scenario, transport operators can easily distinguish between own transport, where goods are owned by the same group of companies between different business locations and transport of goods owned by different companies mainly for freight and reward hire.

As in many other countries, road freight remains the dominant mode of domestic transport in Malaysia. Fixed costs, which include physical transport infrastructure such as roads and highway are financed through government allocations, while operational costs, which include fuel and lubrication, maintenance, road use and congestion charges, are generally the variable costs.

Road transport is often chosen by transport operators as a convenient and efficient mode of transport, as it provides the most efficient means of point-to-point transport to meet the needs of multiple vehicles or multiple cargo handling. Thus, road freight transport offers the owners and shippers of goods much more efficient and lower costs, as well as less risk of damage or loss of goods.

Load Capacity: Full Truck Load, Less-Than-Truckload and Partial Truckload

In road freight transport, the load capacity of a truck is used to distinguish a truck-load type, namely full or partial truckload. Generally, the following are commonly used in the industry:

I. **FTL for Full Truck Load,**
II. **LTL for Less Than Truckload, and**
III. **PTL for Partial Truck Load.**

When a shipper books the entire truck for his transport needs, the term FTL is used. This means that the so-called booked truck is used exclusively to transport the shipper's goods from the point of departure to the destination without intermediate loading. Therefore, FTL is considered the best possible choice when the volume of goods takes up the entire truck space and when there is a specific delivery time to the buyer that does not justify intermediate stops enroute, or when you are delivering sensitive or dangerous goods that normally have to be transported separately and cannot be combined with normal goods.

The terms LTL and PTL are only used when the shipper does not need the entire truck space but only a certain capacity of the truck. In this case, the total freight costs are shared with the other shippers who would also need a certain part of space in the same truck. So the terms PTL and LTL seem similar, but there is a difference between them.

The difference between PTL and LTL is that in PTL the cargo loaded on the truck remains on the same truck, from point of departure to the point of destination, whereas in LTL the truck with the loaded cargo goes to several loading and unloading points, where the LCL cargo can be transferred to another truck or additional LTL cargo can be loaded into the truck. Comparing LTL and PTL, LTL transport seems to be the most economical option, but it is also generally the slowest.

Sub-sectors of Road Freight Transport

In general, road freight transport can be divided into the following sub-sectors:

I. **General or conventional transport**
II. **Container transport or haulage**
III. **Road tanker transport**
IV. **Road temperature-controlled transport**
V. **Tipping and construction transport**
VI. **Warehouse and distribution transport**
VII. **Agriculture and livestock transport**

I. General or Conventional transport

Rigid Body Truck

A truck for general transport is called a cargo lorry or cargo trailer, depending on the length of the vehicle. A cargo lorry usually has a rigid body and the cargo trailer is an semi-trailer where the prime mover is attached to the semi-trailer.

Rigid Body Truck

Luton or Box Type

Refrigerated Type

The fixed (rigid) body truck usually has a wooden body (see diagram), but due to different cargo requirements, the body can be built in different forms, namely box or luton type with locking mechanism, refrigerated type, sliding tarpaulin type, including specifically designed types with special functions, such as concrete mixer, garbage truck, car towing truck and many other types.

Articulated body truck

The commonly known cargo trailer is basically a truck consisting of a prime mover and an attached semi-trailer. The prime mover may have a different towing capacity, which is the main factor determining the total permissible weight of the cargo trailer's load.

The prime mover is the front part of the truck with a robust towing capacity and can be attached to the different types of semi-trailers depending on their size, power and configuration. Such types are :

1. **Open or enclosed dry cargo trailers,**
2. **Drop deck or low loader trailers,**
3. **Refrigerated trailers,**
4. **Tipper or dump trailers,**
5. **Tank trailers**

Dry Cargo Trailers

Dry cargo trailers are usually fully open and are used for the transport of general and non-perishable goods. The cargo is protected from the elements of weather by a specially cut tarpaulin, usually of the canvass type. In the new age of commerce, many types of goods need to be protected from the elements of weather and the use of transport equipment such as pallet in such enclosed cargo trailers has become a common sight in road freight transport.

In the case of enclosed trailers, the goods are loaded via the loading ramp at the rear of the trailer. Some dry cargo trucks have a sliding tarpaulin that allows loading from the side of the trailer. This type of trailer is generally referred to as a curtain side trailer. The open cargo trailer generally allows loading of goods from both sides and from the rear of the trailer.

Open Cargo trailer

Closed Trailer with Curtain Sliding side

Typical types of cargo carried by dry cargo trailers are:

- **Non-perishable goods and foodstuff,**
- **Textile, clothing and household goods,**
- **All kinds of building and construction materials,**
- **Chemicals and hazardous goods,**
- **LTL shipping.**

Lowbed or Low Loader (Gooseneck) Trailers

Drop deck or low loader trailers, sometimes called gooseneck trailers, are similar to open dry trailers in that they are an open trailer with only a few differences. While the open dry trailer is built with a flat level, lowbed or low loader trailers are built with two different decks called the upper deck and the lower deck.

Drop-deck, lowbed or low loader trailer

The lower deck is usually lower than to the ground and has a wider base.

Typical types of cargo transported by lowbed or load loader trailer are large and non-divisible goods such as cranes, tractors, construction machinery and the like.
In general, the use of lowbed or low loader for road transport offers the following advantages:

- **Faster loading and unloading**
- **Better secured cargo**
- **Convenience**
- **Continuous space**
- **Additional weight capacity**

II. Container haulage

A truck comprising the prime mover and the skeletal trailer on which the ISO sea container (20 footer, 40 footer or 45 footer) are mounted on.

The skeletal trailer on which the ISO sea container is mounted can be disengaged from the prime mover and be left behind, usually at the factory warehouse for its loading of cargo into or unloading of the cargo from the container.

Transportation of Container by a container haulier

Goods transported in containers are exposed to various types of stress. Coping with these stresses requires appropriate packaging, adequate cargo securing and correct moisture management. The goods in the form of cargo packaging require professional handling. Only good training and a commitment to quality can lead to safe, responsible transport.

The International Maritime Organization (IMO) has recognised the problems caused by mechanical load stress and have established internationally recognised CTU packing guidelines. These CTU packing guidelines clearly state the acceleration forces to be expected during transport with the various means of transport. To illustrate these load stresses with a few examples.

In the case of road transport, the value is 1 “g” in the direction of travel:

Transportation of Container by a container haulier

The truck was loaded with three interlocking (nested) steel pipes with a gross weight of 17 metric tons. It is not known whether the load was secured inside the container. What is certain is that the securing measures were inadequate, because the deceleration was sufficient to cause the pipes to shoot forward so that they smashed through the end wall of the trailer and the driver’s cab and finally landed on the ground directly in front of the truck.

In the case of sea transport, the cargo would fall against the wall of the container under the forces of rough seas during a maritime peril.

Cargo tipped towards the wall of the container causing damage to container

The loading capacity of a container is also known as maximum payload. For example, an average 20-foot and 40-footer standard steel container has a maximum payload of 28.3 and 28.8 tonnes respectively. However, containers with significantly higher payload also existed. If the maximum payload limit is not observed, the container will be damaged – in extreme cases, in the way as seen in the picture.

The bottom of a container gave way to a heavy load

III. Road tanker

Tankers are usually trucks with a specially designed tank mounted on either a rigid body or a semi-trailer, depending on the volume of cargo for which the tank is designed to contain.

A road tanker for petroleum products

A road tanker for cement

Generally, the tank is equipped with a double-layer wall that serve as a safety and security feature for the transport of the cargo. Typical cargoes transported in tankers are petroleum products, palm oil products, chemicals and smaller quantities of dairy and confectionary ingredients for further processing in a manufacturing plant.

IV. Road temperature-controlled transport

Refrigerated or Reefer trailer

Refrigerated trailer, also known as reefer trailer, consists of an enclosed body equipped with insulation materials and machinery for temperature control. This type of trailer is usually designed for transporting perishable cargo at low or controlled temperatures, e.g. chilled or frozen products, temperature-sensitive products such as laboratory reagents, photographic materials, house-hold foodstuff, and pharmaceuticals.

Refrigerated trailer attached to a Prime Mover

In Europe, fresh-cut flowers are also transported using such refrigerated trailers to preserve their freshness and condition, while transit to the stores or airport for exports.

Refrigerated trailers are usually fitted with the refrigeration units, mounted on the front portion of the enclosed insulated body of the trailer. These refrigeration units come in various capacity and can provide temperature control ranging from minus 22 degrees Celsius to positive 7 degree Celsius, depending on the business requirements of the transport enterprises.

V. Tipping and construction transport

Dump or Tipper Trailers

Tipping trailers are trailers equipped with a hydraulic mechanism that raised the cargo bed of the trailer, which is hinged at the rear. Tipping unloads the cargo, usually in bulk, onto the ground using gravity. Typical types of cargo transported by this type of trailers are gravel, sand, stone, land-filled trash, construction and demolition materials and the like.

This tipping technique, used by tippers or tipping trailers, is sometimes adopted by the container transport industry, which uses a similar hydraulic mechanism on the container skeletal trailer to tip a container, usually loaded with bulk commodities, such as grain, raw sugar or even fertilisers and chemicals. (see pictures)

Refrigerated trailer attached to a Prime Mover

The purpose of using the tipping technique is to enable swift unloading of the cargo, assisted by the gravity and there is not much attention given to the condition of the unloaded cargo, which is generally transported in bulk form.

An ISO container tipping to unload cargo

VI. Warehouse and distribution transport

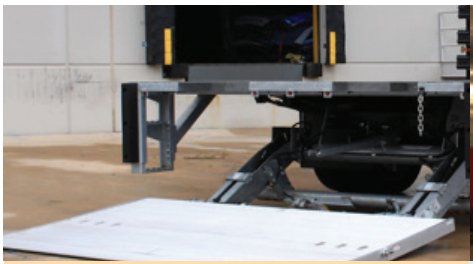
In warehousing companies, the activity to collect and distribute goods for and on behalf of customers is an essential part of their services as warehouse operators and fulfilment centres. Warehouses continuously receive and ship goods to fulfil orders.

A truck fitted with a Tail-Gate platform

Therefore, when providing services for the collection and/or distribution of goods, especially in urban areas, time and speed are of utmost importance. Usually, such services are provided by trucks with a tail-gate platform that are easily accessible in urban areas (e.g. business districts).

A tail-gate or sometimes known as lift-gate is a platform installed at the rear of the truck which can be operated by the driver, used for loading and unloading of heavy freight packages at locations where there are no facility with either docks or forklifts, such as the premises of the customers' store fronts. The tail-gate platform is operated by a hydraulic system and has a lifting capacity of between 0.5 to 1.5 metric tonne of cargo weight.

When the tail-gate is lifted up and in closed position, it also acts as an additional “door” which could provide the robust security protection, such as secondary protection on the inner door, accidental opening of the inner door or even preventing pilferage from unknown persons whilst the driver is delivering the merchandise to the store, after unloading from the truck.



A tail-gate fitted to the rear of the truck

Tail-gate in closed position

Another activity offered by storage companies is the distribution of newly assembled cars. This distribution is usually carried out by appointed carriers who have made a special arrangement with the assembly plant, and the transport is from the yard of the assembly plant to the various authorised dealers located at different places. The transport is carried out by specially designed carrier which has a double platform. Each platform is designed to hold four to five vehicles, depending on the length of the vehicles.

A Car Carrier with twin platform

A carrier designed to transport motorbikes

In the same context, the transport of newly assembled motorbikes from the assembly plant to the various authorised dealers is carried out by a specially designed truck which has several decks, each deck is being able to accommodate a certain number of motorbikes. When the motorbikes are loaded onto the truck, they are fastened with nylon straps to the “fastening eyes” that are placed on the floor of the deck. The vehicles stowed on the car carrier are also secured with these nylon straps to the specially welded fastening eyes on the floor of the platform.

VII. Agriculture and livestock transport

For some time now, agriculture has been supported by the transport sector, especially by conventional truck. The conventional trucks are usually open truck type.

A truck constructed for carriage of live animals

In the last two decades, as new compliance requirements have been imposed by agricultural authorities, the transport sector has had to comply to these requirements. The conditions and state of hygiene for the transport of agricultural products and livestock has necessitated the development and construction of special truck types.

An example of this is the transport of live chickens and chicks, which must be equipped with adequate air circulation to ensure the health of the chicken and chicks. Also, when transporting cattle and goats, the truck used must be equipped with sufficient facilities to ensure the safe transport of the animals.

3.1.2 Rail freight transport

Rail transport has traditionally played an important role in the movement of bulky goods, usually in large quantities, from manufacturing plants to distribution strategically located distribution depots or to and from seaports. It is one of the most important and cost-efficient ways to move people and goods from one place to another when distances are long. This is because it operates with wagons or carriages of various types pulled by a locomotive powered by a diesel engine or an electric transformer.

The types of wagon or carriage are usually open or closed wagon types, while some are designed to carry 20 footer or 40 footer sea containers.

Closed type wagon

Other wagon types are designed to carry specific types of cargo such as liquid chemicals or petroleum, cement or fertilisers in bulk, or even vehicles such as cars or trucks.

Platform wagon for 20 or 40 footer sea containers

Other cargoes like logs, long construction poles or water pipes may utilise the platform wagon with the provisions of side standing stanchions, designed to be insertable.

Considering the various positive contributions of rail transport, its main recognisable features are as follows:

- **A greater loading capacity compared to other modes of transport;**
- **Better connections on international routes;**
- **Reliable and relatively safe mode of transport;**
- **Cost-effective for transporting goods over long distances;**
- **Flexible and with a better carbon footprint, helping in reducing environmental pollution.**
- **Generally a slow, but effective and economic mode of transport.**

Advantages & Disadvantages of rail freight transport

To order to fathom the features of rail freight transport, the advantages and disadvantages should be examined in detail for a better understanding:

- **Trains naturally have a higher capacity for transporting goods of different sizes, regardless of whether the quantities involved are large and whether the transport distances are short or long.**
- **Trains are generally inexpensive to operate, which contributes to economic transport.**
- **Rail freight transport usually offers great flexibility so that different types of goods can be transported.**
- **As trains run on dedicated railway lines, the risk of accidents during the journey is very low.**
- **Trains produce very few pollutants, which has a positive effect on the greenhouse effects and protects the environment.**
- **Compared to road transport, trains do not contribute to traffic congestion.**
- **Its flexibility offers the possibility of multimodality, a connection with other modes of transport.**

Its negative sides are:

- **The railways built for trains are not exclusively for trade, as there are also trains for passenger transport.**
- **The speed at which goods are transported to meet the needs of trade is considerably low.**
- **There are height and weight restrictions when crossing the bridges and tunnels.**
- **The railways lines built for train traffic are very dependent on the existing infrastructure around the tracks.**
- **Transport by rail can only start and end at certain locations where there is still a “last mile” delivery, effect that can cause additional operating costs and time.**

3.1.3 Inland waterway and maritime freight transport

Inland Waterway Transport

By definition, inland waterways include rivers, canals and lakes that can be used to transport goods and people on these navigable waterways. Inland waterway transport (IWT) enables ships, boats and barges to transport goods, fuelling the growth of river ports, quays and mini-shipyards.

In Malaysia, settlement patterns have historically been strongly influenced by, first, the physical relief of the land, second, the presence of natural resources, especially tin, forests and land suitable for agriculture, and third, more recently, the pattern of urban industrialisation of the country. In the peninsula, on the other hand, early settlement and subsistence agriculture on the coastal plains, especially on the western side of the peninsula, gradually gave way to larger plantation crops and opencast tin mining. As a result, inland waterways along the coast and navigation on navigable rivers were soon replaced by road and rail links that followed the wave of development from north to south.

The greatest contrast, however, can be seen in the states of Sabah and Sarawak. Always sparsely populated, heavily forested, and with a chequered administrative history that has left them relatively neglected in terms of economic and social development, they are among the least urbanised and industrialised states. The state of Sarawak is characterised by an extensive network of 35 navigable state-recognised rivers, potentially forming an inland waterway system, with a navigable length of about 3,3000 km of the 5,000 km total length.

Sarawak's inland waterway system plays an important role as the primary means of transport for the interior and along the coast, performing similar functions to road and rail transport in Peninsula Malaysia. This inland waterway system of Sarawak is an important link between rivers and settlements throughout the economic system.

Until recently, the extensive network of navigable rivers was the main transport link between Kuching, Sibu, Bintulu and Miri and the most used mode of transport for people in many interior settlements. In addition, freight transport between the interior and the main river and sea ports has traditionally been handled by small riverine boats and barges. There are between 300 and 500 riverine boats navigate the rivers daily. Almost half of them carry passengers, the rest transport bulk goods and general cargo.

Advantages and disadvantages of inland waterway transport:

Advantages
Inland waterway transport has:

- **The least impact on the environment, congestion and pollution;**
- **The lowest cost of transport, whether domestic or international;**
- **The capacity is enormous;**
- **Low energy consumption;**
- **Low land use requirements;**
- **Connects scattered rural communities.**

Disadvantages
Inland waterway transport has:

- **Relatively high travel time compared to other modes;**
- **Geographical constraints which severely limit the extent of the system;**
- **Strong vulnerability to fluctuations in water and weather conditions;**
- **Constraints on the quality transport services;**
- **Severe impacts of erosion on riverbanks due to frequent boat travel on the rivers.**

The extent and relative importance of these advantages and disadvantages depends on the specific circumstances of the waterway system and the alternative modes of transport available.

Maritime Transport

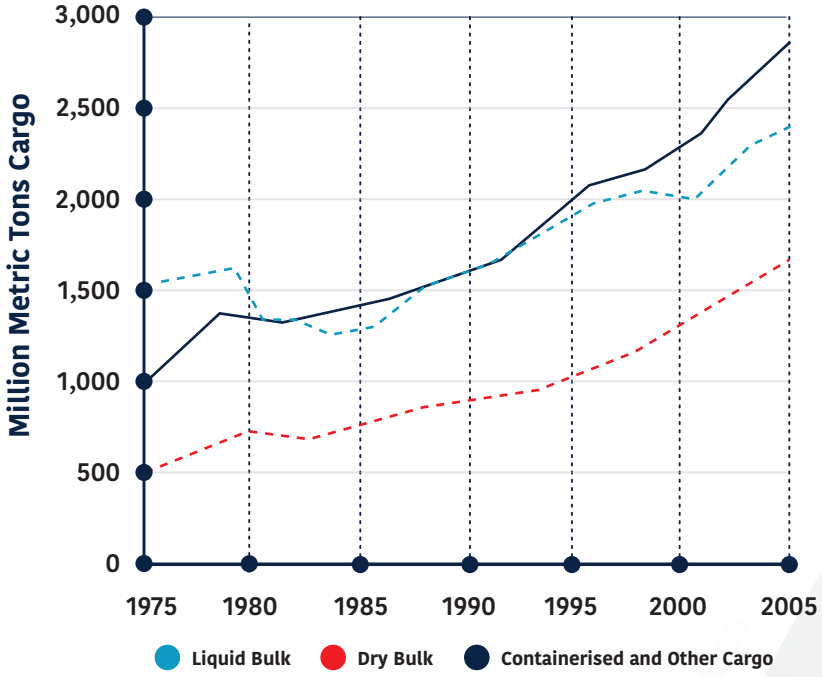
The global movement of goods is a critical element of the global freight transport system, which includes sea and coastal routes, inland waterways, railways, roads, and air freight. In some cases, the freight network connects locations across multiple transport routes and serves as a substitute for other modes of transport. A main example is short-sea shipping in containers, where the shipper or logistics service provider can decide to a certain extent how to transport the freight between locations. As a rule, however, international maritime transport is complementary to other modes of transport. This is particularly true for intercontinental container freight and for liquid and dry bulk goods such as oil and grain. Here, international maritime transport links roads, railways via sea and coastal routes.

Maritime transport is an integral, sometimes less publicly visible to the public, part of the global economy. The maritime transport system is a network of specialised ships, the ports they call at and the transport infrastructure from factories to terminals to distribution centres and markets. Maritime transport is a necessary complement to, and occasionally a substitute for, other modes of goods transport. For many trade routes, there is no direct substitute for maritime transport. (Air transport has replaced maritime transport in carrying freight, but only a small proportion of the most valuable and lightest goods) On other routes, e.g. coastal or short sea shipping or within inland river systems, maritime transport can be a substitute for roads and railways, depending on cost, time and infrastructure constraints.

Last but not least, globalisation created overseas labour markets that favoured the transport of semi-finished and intermediate products to where manufacturing costs were lower. Low cost fuels for ship propulsion, supported by the economies of scale of ships, minimised the unit costs of semi-finished products and retail goods through supply chains across several continents. Today, it is common for agricultural products to be harvested on one continent, shipped to another for intermediate processing, transported to a third continent for final packaging, and then brought to market. For example, cotton grown in North America may be shipped to African fabric mills and then to Asian garment factories before returning to North America for retail sale. Orange juice, wine and other products have also found markets in other continents when seasonal or climatic constraints require an overseas source or they compete with domestic production at higher labour costs.

Another trend associated with globalisation is the pace at which trade is taking place. Globalisation has encouraged trade in goods and services in smaller packages that are delivered "just-in-time". This has increased the "speed of freight", justified faster and smaller container ships over the last two decades. In a globalised economy, containerisation offers the advantage of integrated freight transport across all modes. Similar to the more uniform transport of liquid crude oil or unprocessed grain, containerisation has standardised the shipping package and reduced the unit cost of transporting most finished goods.

The relationship between maritime shipping, economic growth and trade is illustrated in the following chart. This graph shows the development over the past 16 years for OECD countries in terms of gross domestic product (GDP, measured in USD in 2000), trade (measured as exports plus imports, USD in 2000) and fuel sold for international maritime transport (measured in thousand tonnes).



Relationship between shipping, economic growth and trade

Ports in Malaysia

In Malaysia, there are a total of seven (7) major federal ports, namely:

1. **Port Klang (Selangor)**
2. **Penang Port (Penang)**
3. **Port of Tanjung Pelepas (Johor)**
4. **Johor Port aka Pasir Gudang Port (Johor)**
5. **Kuantan Port (Panang)**
6. **Labuan Port (Sabah)**
7. **Bintulu (Sarawak)**

The above seven (7) federal ports are under the jurisdiction of the Ministry of Transport and are administered under the three Port Authorities Acts, respectively while all ports in Sabah and Sarawak (except Bintulu and Labuan Port) fall under the jurisdiction of the Sabah and Sarawak State respectively.

Location of Malaysian Ports

In the State of Sarawak and Sabah, the main seaports are:

A) Sarawak:

- **Kuching Port**
- **Rajang (Sibu) Port**
- **Miri Port**

B) Sabah:

- **Kota Kinabalu Port**
- **Sepangar Bay Container Terminal and Oil Terminal**
- **Kudat**
- **Sandakan**
- **Tawau**
- **Lahad Datu**
- **Kunak**
- **Semporna**

3.1.4 Air freight transport

Airfreight plays a crucial role in the shipment of product samples. While this is not a major source of air freight, it is critical for manufacturers exporting production products. Trade documents are increasingly exchanged electronically, but there is still a need to send samples, designs, and technical drawings by air to smaller companies that are not able to reproduce them from electronic files. More importantly, different types of samples need to be exchanged between manufacturers and potential buyers.

As air cargo volumes grow, there is a natural progression from passenger aircraft to chartered cargo planes of increasing size and eventually to scheduled cargo services. The use of chartered aircraft provides the shipper with more reliable capacity, but freight rates are higher, especially for smaller freighters or when it is not possible to maintain a high load factor in both directions (either a round trip or triangular trip). Capacity can also be an issue in the peak season when all exporters are competing for the available space.

To meet the needs of shippers exporting small volumes or medium value cargoes, a number of hybrid services have been developed. The first relies on consolidators who group shipments together to achieve sufficient volume to allow reasonable freight rates. The consolidated shipments are then flown to the nearest major hub where they are reconsolidated for their final destinations.

The second option is to hire freight forwarders to arrange road transport from the origin of the cargo to the nearest hub airport. This requires a one or at most two-day journey and includes a border crossing if the hub airport is in a neighbouring country. This type of road-air service is increasingly offered as part of an air freight service RFS (road freight service), where goods are transported by truck under an air waybill. An example is Malaysia Airlines, which offers the service RFS from Kuala Lumpur International Airport (KUL) to Singapore Airport (SIN), to load freighters that are not calling KUL.

The third variant is a combination of air and sea freight. A combination of air and sea freight can be used if there are cheap flights to a hub airport that has a large seaport nearby, for example Singapore or Dubai. Exports are transported by air freight from the production site to the gateway port. This method is used when exports have missed their loading date and need to be loaded onto a specific cargo ship, or when land transport to the gateway port in another country is costly, unreliable or requires a difficult border crossing. The sea-air combination is used for cargo that requires a delivery time that is shorter than the transit time by sea but longer than the transit time by air. The advantage is that it offers a lower freight rate than the air freight rate. For landlocked countries, this multimodal transport is combined with an initial road transport.

The growth of air freight over the last few decades has led to a diversification of the types of services and also the markets served. Most goods by air freight are high-value, low-density goods or time-sensitive goods such as perishables. The share of international air cargo (by value) has increased. ICAO estimates that air cargo accounts for about 40 percent of international exports by value, but the share by weight remains under one per cent.

The main commodity groups transported by air freight are:

- **Aviation - equipment and spare parts,**
- **Automotive - equipment and parts,**
- **Pharmaceuticals,**
- **Computers, telecommunications equipment and other technology products,**
- **Clothing and textiles,**
- **Consumer electronics,**
- **Perishables - flowers, fruits, vegetable and fish, and**
- **Intermediate goods for decentralised manufacturing.**

The air cargo industry is made up of companies operating under a variety of different arrangements. Combined airlines operate passenger aircraft, combined aircraft with additional cargo capacity and, in some cases, cargo freighter. They may limit their business to carrying express parcels, mail and palletised cargo on scheduled passenger services or operate their own cargo service with dedicated aircraft. As a rule, they are national airlines with a domestic hub-and-spoke system. They use their hubs as regional/continental gateways that feed into their international service and interlining arrangements with other international carriers. They have the flexibility to switch from belly capacity to freighter capacity on routes with strong cargo demand, but otherwise offer the increased (often unique) frequency and coverage of their passenger network.

All-cargo airlines operate scheduled flights for contract shippers and may also offer charter flights for other airlines.

Top 20 Cargo Carriers in 2021 Scheduled CTK ('000)

Rank	Airline	2020	2019	2018
1	**Federal Express (Fedex)**	19,656	17,503	17,499
2	**United Parcel Service (UPS)**	14,371	12,842	12,459
3	**Qatar Airways**	13,740	13,024	12,635
4	**Emirates**	9,569	12,052	12,713
5	**Cathay Pacific Airways**	8,137	10,930	11,284
6	**Korean Air**	8,104	7,412	7,839
7	**Cargolux**	7,345	7,180	7,322
8	**Turkish Airlines**	6,977	7,029	5,890
9	**China Southern Airlines**	6,591	6,825	6,597
10	**China Airlines**	6,317	5,334	5,804
11	**Air China**	6,121	6,767	7,051
12	**Atlas Air**	5,458	4,522	4,553
13	**Kalitta Air**	5,211	3,593	N/A
14	**AeroLogic**	4,870	3,581	N/A
15	**Lufthansa**	4,828	7,226	7,394
16	**AirBridgeCargo Airlines**	4,609	5,168	5,511
17	**Singapore Airlines**	4,156	6,146	6,491
18	**United Airlines**	3,950	4,852	4,455
19	**EVA Air**	3,888	N/A	3,580
20	**Asiana Airlines**	3,601	3,567	4,067

3.2 Freight Forwarding

Whether by air, sea or land, freight forwarders can facilitate the global movement of goods in the most efficient, cost- effective and reliable way, with the possibility of visibility and control through a network of global partners and the use of advanced digital technologies.

3.2.1 What Is Freight Forwarding?

The freight forwarding industry has undergone profound structural changes, since its beginning. In the past, these changes were due to the enormous increase in world trade. In part, it was the result of increased government control of transport activities, and the freight forwarding industry was able to create the organisational environment on a scale commensurate with the growth in international trade.

When viewed holistically, freight forwarding is about planning and coordinating the movement of goods across international borders on behalf of shippers. Activities within freight forwarding include planning warehouse requirements, arranging cargo insurance, planning transport routes, using the right means of transport, freight negotiation, trade documentation and customs clearance.

In the depth of freight forwarding, it includes strategic logistics planning and execution for the international movement of goods, on behalf of manufacturers or cargo shippers. Therefore, a freight forwarder is deemed to conduct freight negotiations, track containers while cargo is in his care, prepare customs documents and, in most cases use freight consolidation function to allocate transport costs among cargo owners when the volume of cargo is insufficient to occupy the entire space of the means of transport (such as a container, wagon or truck).

Import and export activities offer profitable opportunities for companies that have the financial resources to implement sound strategic logistics plans. But the logistics of international shipping are just too complex, so these importers and exporters need a high level knowledge, to say the least:

- **Intimate knowledge of customs regulations and protocols, which usually vary country to country and even port to port;**
- **Flexible problem-solving know-how in case whether conditions, technical or human nature do not allow for timely transportation, as it is not always guaranteed that everything will work at all times;**
- **A passion for building networks, because in many ways a supply chain is only as strong as the connecting parties that work together within that chain**.

When it comes to the final considerations, when it comes to freight forwarding activities, the following are crucial:

- **Success stories are important;**
- **A good reputation for excellent service and reliability**
- **Experience and familiarity with trade routes**
- **Extensive networking of its working offices or partners, locally or globally.**

3.2.2 What is expected of a Freight Forwarder?

The majority of importers and exporters entrust their planning and execution of transportation, be it local, regional or even global, they would always consider their contracted freight forwarder as their "architect of transportation", with the activities generally offered as their services having the following functionalities, but not limited to them:

• Customs clearance

A customs agent or forwarding agent is usually required for documentation and customs clearance on import or export. This critical activity of the freight forwarder requires a special licence from the customs authority and under no circumstances may an unlicensed broker manages and submits the necessary documentation to carry out the import/export processes.

• Tracking of shipments

Professional freight forwarders are expected to have an internal Transportation Management System (TMS) that provides them with a complete overview of freight movements and the various stages of shipment tracking. Such tracking enables the freight forwarder to report the status of movements to various parties that play a role in managing the freight movements. These include the intermediate offices where the freight is handle or transhipped, the destination agent to pre-plan its activities before the arrival of the freight, and finally the customers who have entrusted the freight to the forwarder and who also need to inform their final recipients.

• Warehousing services

Some freight forwarders operate their own warehouses where they can offer their customers usually importers or exporters, but sometimes also strategic freight partners, additional facilities for storing or upgrading the shipper storge requirements. In most cases, however, many forwarders do not operate their own warehouses, but offer their customers storage capacity in a warehouse owned and operated by a subsidiary or subcontractor in a convenient location.

• Negotiating with intermediaries

In most freight forwarding services, freight forwarders always offer to book freight for their customers, in many cases presenting themselves as freight specialists. In these circumstances, they need to be well positioned to negotiate cost-effective freight rates with intermediary carriers, which is by no means an easy task. This fine art of negotiating with the intermediary carriers requires them to capture the interest of carriers by weighing the goodness of the freight type, time flexibility, creditworthiness, tonnage/stowage ratio, and many other factors.

• Freight space planning & route optimisation

Intelligent planning, coordination and scheduling of freight space are usually the forwarder's forte. When a shipper entrusts its first shipment to a freight forwarder, the appointed forwarder always takes the opportunity to demonstrate his capabilities in the best possible way. The forwarder shows the shipper the shipping formula, whether it is a cost saving through various shipping options, including consolidation together with various shipments from other shippers, and whether it is timely planning so that the shipments arrive at the destination and meet the requirements of the consignees, or whether it is a direct shipment with specially negotiated freight options or equipment types for the consignee, especially due to special arrival conditions. Freight planning and route optimisation are the strengths of freight forwarders, which are their so-called "trade secrets", and this is probably the important reason for shippers to use freight forwarders services.

• Consolidation of freight

Freight forwarders usually have many customers whose shipments do not require a full load to transport their shipments. In many cases, these various smaller shipments have to share space in a full load such as a container, truckload or even wagon load. In such a situation, consolidating the various smaller shipments (commonly known as “less than container load - LCL)” into one full container load (FCL) is a service that the freight forwarders typically offer, whereby multiple smaller shipments are all booked onto the same container. In these cases, the shipping costs are distributed among all participating shippers based on their cargo space requirements, effectively reducing freight costs.

• Cargo Insurance

As freight forwarders are entrusted with the planning, scheduling, execution of shipments, shippers also leave it to the freight forwarder to arrange insurance cover for the consignment, as the freight forwarder is responsible for the accuracy and timeliness of declaration of the goods to the insurers. In most cases, the forwarders are also authorised representatives of the insurance company. Basically, cargo insurance is designed to compensate for any losses when goods are damaged or stolen during transport. Therefore, such services not only protect the interests of shippers (and consignees), but also ensure that the insurance cover for the shipment is adequate.

Specific Note:
Cargo insurance does NOT cover all consequential damage related to the incident that occurred. For example, if a container falls off a truck and damages a nearby structure, cargo insurance will only cover the damage to the contents of the container (goods), but NOT the consequential damage to the damaged nearby structure. Such insurance is usually taken out by the freight forwarder, who is directly responsible for the transport.

3.2.3 General attributes of a reliable forwarder

Finding the right freight forwarder for your transport needs can sometimes be a challenge. Not only do you need to find someone who will take excellent care of your goods, but also all the smaller details. The best logistics companies can come up with many features and qualities that will ensure that all the smaller details are taken care of and that your goods arrive at the expected time and without any damage to the goods.

There are six qualities that distinguish a reliable freight forwarder:

I. **Intimate knowledge and experience**
II. **Strong dedication to customer service**
III. **Good communication**
IV. **Flexible services offering**
V. **Technology-oriented**
VI. **Reputation and trustworthy**

3.3 Warehousing

> **A warehouse should be viewed as a place to temporary store inventory and to act as buffer in supply chains.**
>
> **A warehouse serves, as a stationary unit, in the supply chain - to match product availability to consumer demand and as such has a primary aim, which is to facilitate the movement of goods from suppliers to customers, meeting demands in a timely and cost-effective manner.**

3.3.1 What is a Warehouse?

A warehouse is primarily a handling point where all goods are received and then despatched, as quickly, effectively and efficiently as possible. The basic processes of warehouse management have remained the same over time: Goods are received at the warehouse, orders are processed and replenished, incorporating some value-added services, and finally goods are shipped for distribution to intermediate and final consumers.

Advanced activities in warehouses usually relate to increased use of technology and automation, improved performance measurement and effective management of resources. Originally, warehouse processes were developed to support the supply chain management role. However, with the introduction of new technologies and equipment, warehouse processes have become leaner and more environmentally friendly.

The warehouse still plays an important role within supply chains and will continue to do so, even though these warehouses will appear in different formats.

The growth of e-commerce fulfilment centres, for example, is changing the warehousing landscape. Finished goods need to be stored as close as possible to the points of consumption to reduce ever increasing logistics costs and also to meet increasingly customer demands. As a result, new warehousing technologies such as cross-docking, trans-loading centres, fulfilment centres with sorting and consolidation facilities and reverse logistics have been developed to complement their original role as storage facilities.

The original role of the warehouse as a storage facility has also evolved. Customer demands for efficiency and effectiveness have led to the introduction of technologies where sophisticated automation, robotics and advanced software system have come to the fore-front of warehousing operations.

3.3.2 Classification of Warehouses

Generally, warehouses can be categorially divided into six types according to its functionalities:

I. **General warehouses**
II. **Cold Storage warehouses**
III. **Controlled humidity**
IV. **Flammable / Hazardous storehouses**
V. **Shed storages and open storages.**

I. General Warehouses

A general warehouse is designed to store pallets, bins and bulk for specific periods of time until they are merchandised. It operates as an independent facility with a room temperature between 25 to 28 degrees Celsius, and includes receiving, shipping and loading spaces, as well as storage areas and the necessary aisles and spaces for offices and workers' services.

View of a General Warehouse

II. Cold Storage Warehouses

Cold storage warehouses are designed to maintain the quality, health and safety of perishable materials and products and general supply materials that require cold spaces for storage, with temperatures that vary between zero and 4 degrees for chilling, and zero and minus 16 degrees for freezing. In addition to general warehouses requirements, they include specific spaces for freezing and cooling, as well as equipment facilities and specific areas for mechanical equipment.

III. Controlled Humidity

Controlled humidity warehouses resemble general ones in all aspects, except that they are constructed with steam insulating barriers. They contain control equipment in order to maintain a specific humidity level inside the building. The warehouse building can be separate or adjacent to a general warehouse.

Controlled humidity warehouses are used to store merchandises and materials for many reasons, namely:

a) **Protecting technological materials and humidity sensitive materials against deterioration when storing them in general warehouses and preparing them for immediate use, upon releasing from the warehousing facilities.**

b) **Reducing the initial conservation costs and the re-conservation costs that some products might need when storing them in general warehouses.**

c) **Preserving materials placed in temporary storage until they are fixed, liquidated, conserved, re-conserved or assembled.**

d) **Providing full protection for materials that are being treated for conservation.**

IV. Flammable / Hazardous Storehouse

Flammable / hazardous storehouses are different from general warehouses because of the dangerous aspect of the stored materials and the necessary measures taken to prevent, eliminate and extract gases and vapours that are generated by the storage of these materials, through appropriate ventilation, and according to the conditions for building warehouses and storing flammable / hazardous substances and the criteria and standards of the Fire Department and Department of Occupational Safety and Health. The substances that are stored as part of this category of warehouse include poisons and some petroleum substances, oil and lubricants, chemical substances, acids, corrosive liquids and oxidizing substances, as well as other similar flammable and hazardous substances.

V. Shed Storage

It is a covered or semi-covered structure with no lateral or completely finished walls that may or may not, contain sprinklers and fire extinguishing alarm systems. This type of warehouses is usually used to store gas, petrol and oil cylinders, lubricants-filled cylinders, trucks, unpolished wood, as well as their construction materials. It is noteworthy that shed storages that are used to store hazardous substances are subject to specific design requirements and conditions.

3.4 Small package delivery

What exactly is small package delivery or shipping? In the world of modern transportation, the logistics solutions offered by the various transportation companies may use different terminology which may be quite confusing at times. “Small package” shipping and delivery actually refers to the light weight parcels that weigh less than 70 kgs. Having this weight limit may not have the right understanding of “small package”.

Parcels, or small packages, are viewed differently as compared to other types of normal freight shipments. Traditionally, all freight parcels, irrespective of sizes and weight are transported as LTL or LCL loads by transportation or shipping companies. The transport or shipping companies would generally offer the LTL or LCL option for the carriage of the small parcels, without specifying the weight and dimensional sizes limitations. Such services are generally the forte of the courier service companies, such as DHL, UPS, FeDEX and some local companies like GDEX, TNTT, PosLaju and ABX. The services of the courier companies would have different service level of deliveries, depending upon the scope of agreement during the times of hiring.

However, with the emergence of eCommerce companies, the small parcel delivery system has experienced significant development over the past several years, mainly due to the increase of eCommerce sales transactions, due to consumers switching away from the traditional brick and mortar store shopping to the convenient and ease of online ordering.

Such small package orders are retrieved from the pick-up or drop-off location of the supplier’s choice and are then sorted and prepared for transit and (eventually) final delivery. Unlike normal freight shipping - when small parcels or boxes are placed onto pallets before being loaded onto the truck - individual small package shipments can be moved without assistance, and are placed directly onto carrier vehicles with other parcel shipments.

3.4.1 Association of Malaysian Express Carriers (AMEC)

Local couriers in Malaysia are represented by the Association of Malaysian Express Carriers and this association is fully supported by the Malaysian Communications and Multimedia Commission (MCMC). Currently, this association consists of 27 members and is headed by the President, Mr Teong Teck Lean of GD Express Sdn Bhd. Courier services are currently licensed by MCMC and a total of 121 licenses for these non-universal services have been issued as at 30 June 2022. As for universal service licences, only Pos Malaysia Bhd was granted a licence based on the policy of the National Postal Strategy.

In 2019, there were 116 licensed courier companies in Malaysia operating 324 hubs, 1,169 branches and 298 gateways.

A hub is a location where the couriers consolidate their shipments on a larger scale, usually at large terminals, and then redistribute the smaller shipments to their respective destinations.

However, in the field of logistics and supply chains, the concept of hub has often been introduced in different terms, depending on its functionality: for example, logistics centre, logistics zone, freight terminal, distribution centre and warehouse.

A branch is an office of a company located in a different place other than the company's headquarters. A branch office is simply another location involved in the same business activities of the company.

A gateway refers to a point where freight is exchanged from one location to another between transport companies, usually at an airport.

In 2019, a total of 18,819 motorbikes, 5,961 vans, 5,296 lorries, 100 articulated trucks and 151 trailers were used in courier traffic.

Courier traffic volume in 2019 was 114.9 million parcels (domestic) and 8.1 million parcels (international). In the same year, 90.9 million document covers (domestic) and 2.2 million document covers (international).

3.5 VAS - Value-added services

Value-added services in the logistics and supply chain sub-sectors offer companies the opportunity to render more competitive advantages in increasing customer satisfaction. Offering these value-added services, especially in operations, further enhances customer trust. The supply chain and logistics sub-sectors are among the most competitive sectors and value addition would inevitably give the company an edge. Value-added services are simply the additional distribution and warehousing services that these third-party logistics (3PL) service providers to other companies looking to outsource their supply chain activities.

Companies are constantly looking for ways to provide their customers with additional competitive advantages to better meet their needs. They want to save space, time and money and keep their inventory as low as possible while adapting to the ever-changing sourcing patterns of their customers.

The wide range of value-added services offered by 3PL's product inventory and process management experts has often led to optimisation of the entire supply chain. This usually happens when customer compliance issues arise before, during or after certain transport and storage activities.

Value added services also enable companies to comply with various industry standards and regulations, which help manufacturers maintain their competitive edge. In addition, value-added services can contribute to quality control by including operations such as packaging, labelling or pallet building during warehouse picking and later distribution to customer stores.

When manufacturers use value-added services in the final stage of the supply chain, they can meet the quality assurance and product finishing standards promised to their customers, saving time and money that can be spent on their main business of producing new goods or expanding their markets and revenue streams.

Companies that partner with value-added logistics providers can focus on their core business and remain more competent in the marketplace.

Value-added service providers offer a range of services that add value to products. How do they do this and do manufacturers benefit? Let's look and examine some of the offerings and how they benefit manufacturers:

Custom packaging

We know that not all products fit into a nice packaging box. The packaging box can be redesigned, not only to protect the delicate products inside, but also in present the outside as a new, aspirational product packaging.

Kitting or bundling as a service

Sometimes different components or parts need to be joined together for further processing or assembly. Therefore, custom kitting as a value-added service is one such service, where customised kits for the lower-level components or parts are stored in the logistics warehouse for later picking. A 3PL company can then pick up the orders, pack them according to the customers' needs and deliver them to the customers. This helps save time and resources, which ultimately speeds up the logistics workflow.

Custom Labelling

You make a a big impression with specially designed customised labels on items or parcels.

Returns management / Reverse logistics

An important element of a value-added logistics service is returns management, sometimes referred to as reverse logistics. This is the process whereby a contracted third party receives and processes customers' returns. For larger corporate customers, this activity also deals with the return of shipments.

There are countless value-added services in the logistics and supply chain sub-sectors, but some important ones can be identified as follows:

- **Packing and repacking**
- **Warranty management**
- **Assembly and packing**
- **Consolidation**
- **Quality inspection**
- **Inventory management**
- **Reverse logistics**
- **Sorting and labelling**
- **Transloading Management**
- **Direct Store collection & delivery**
- **Spare parts management**

4. Economic Characteristics

Transport and warehousing form the core component of the logistics sector in Malaysia, while other logistics sub-sectors include value-added services, freight forwarding and small parcel delivery. The latter sub-sectors are highly fragmented and are mainly operated by small owner-operated and medium-sized logistics companies.

In 2019, Malaysia's logistics sector contributed 3.8% to the country's GDP. Trade activities in Malaysia have increased significantly over the years, with a CAGR of 6.5% between 2013 and 2018. Transport activities have also increased over the years, with a CAGR of 3% between 2013 to 2018. The government's initiatives under the National Logistics Trade Facilitation (NLTF) 2015 - 2020 and the National Transport Policy (NTP) 2019 - 2030 aim to increase the GDP contribution of logistics services to 8.9% by 2020 and beyond, and to internationalise the logistics industry in Malaysia as part of regional trade integration. The National E-commerce Strategic Roadmap (NESR) established in 2016 also aims to accelerate the development of e-commerce activities and position Malaysia as a regional e-fulfilment hub in the near future.

In general, the cargo transportation and warehousing sub-sector is expected to contribute about 3 to 4% to Malaysia's GDP, estimated to be MYR40 billion to MY60 billion.

In 2019, these 2 sub-sectors contributed 3.8% to our national GDP, estimated at MYR 57.2 billion.

Currently, the logistics sector employs more than 600,000 people and it is estimated that this sub-sector could grow by 30 to 40% in the next 3 to 5 years. Another important factor is the rapid expansion of the e-commerce sector, which recorded a massive growth of over 30% in the first quarter of 2021.

Statistics quoted in this section are extracted from the various annual survey reports undertaken by the Department of Statistics, Malaysia. Reports from MIDA & various agencies are also included.

4.1 Performance of the Logistics Sub-sectors

The freight and logistics market in Malaysia was estimated at MYR 160.92 billion in 2020, and is expected to reach more than MYR 221 billion by 2026 at a CAGR of more than 4% during this forecast period.

Malaysia's economy has always been dependent on trade, with imports and exports being an important factor. Therefore, the logistics sector is an important contributor to our economy, supporting the major industrial sectors, manufacturing, oil and gas and services.

4.1.1 Performance of Transportation and Storage Services by Activities

In 2017, Transportation and Storage Services contributed to a gross output value of RM120.7 billion compared to RM109.2 billion in 2015, representing an annual growth rate of 5.1%. In line with the growth in gross output, the value of intermediate input increased by RM7.5 billion to RM73.0 billion, representing an annual growth rate of 5.6%, giving a value added of RM47.7 billion for 2017. The number of persons employed in this sub-sector also increased by 3.2% to 437,926 persons compared to 411,273 persons in 2015. At the same time, the salaries and wages paid in 2017 amounted to RM16.2 billion compared to RM14.3 billion in 2015.

Data was based on the Annual Economic Survey conducted by the Department of Statistics.

Value of Gross Output

Between 2015 and 2017, the value of gross output of transportation and storage services increased by 5.1% per year. The largest contribution to the gross output value of RM41.3 billion (34.2%) came from the warehousing and support activities, as recorded in the 2018 Annual Economic Survey Report. Land transport was second largest contributor at RM30.9 billion (25.6%), followed by air transport at RM24.8 billion (20.5%). These three activities together contributed 80.3% to the value of gross output in the transportation and storage services sector. Other activities that also contributed to gross output value were water transport and post and courier services with a value of RM23.8 billion.

Value of Gross Output by State

Selangor contributed the most to the gross output value for transportation and storage services in 2017 with RM65.4 billion and a 54.2% share, compared to RM60.6 billion in 2015, followed by W.P. Kuala Lumpur and Johor with a gross output value of RM19.7 billion (16.3%) and RM9.3 billion (7.7%) respectively. The total gross output value for the three states was RM94.4 billion (78.2%).

Value Added

The total value added in transportation and storage services in 2017 was RM47.7 billion with an annual growth rate of 4.4% over two years. Warehousing and supporting activities recorded the highest value added in 2017, amounting to RM21.6 billion (2015: RM19.5 billion). This was followed by land transport with RM11.4 billion (2015: RM10.4 billion) and air transport with RM6.4 billion (2015: RM6.0 billion).

Value Added by State

The value added trend by state in 2017 indicated that three states, namely Selangor, W.P. Kuala Lumpur and Johor, are the contributors to value added in the transportation and storage services. Selangor recorded the highest value added of RM25.2 billion with a share of 52.9 per cent, followed by W.P. Kuala Lumpur with RM7.3 billion (15.3%) and Johor with RM3.8 billion (8.0%). Overall, the share of value added for transportation and storage services for all three states was RM36.4 billion (76.2%).

Number of persons engaged and Category of Workers

Land transport recorded the highest employment of 201,694 persons or 46.1% (2015: 44.8%). Warehousing and provision of auxiliary services was the second highest contributor with 132,005 persons or 30.1% (2015: 30.6%), followed by air transport with 41,152 persons or 9.4% (2015: 9.9%). These three activities contributed 85.6% of the total number of persons employed in the transportation and storage services in 2017.

Paid full-time employees recorded a total of 382,778 persons, representing a share of 87.4%, compared to contributing owners & unpaid contributing family workers (49,701 persons; 11.3%) and paid part-time employees (5,447 persons; 1.2%). In terms of the total number of full-time employees, office (clerical) and related occupations recorded the highest number of employees (144,988 persons; 53.7%), followed by manager, professionals and researchers (34,235 persons; 12.1%) and technicians and associate professionals (28,130 persons; 8.7%).

Salaries and Wages

Total salaries and wages paid in the transportation and storage services sector in 2017 amounted to RM16.2 billion. Warehousing and support activities accounted for the highest salaries & wages paid at RM5.6 billion or 34.2% of the salaries and wages paid. Land transport was the second highest contributor at RM4.9 billion or 30.2% (2015: 29.8%), followed by air transport at RM3.1 billion or 19.1% (2015: 18.9%). Overall, salaries and wages accounted for RM13.6 billion (83.5%) of the transportation and storage services for all three activities. Salaries and wages of the transportation and storage employees averaged RM3,487 per month.

4.2 Malaysia Standard Industrial Classification (MSIC-2008)

MSIC 2008	Description
49	**LAND TRANSPORT AND TRANSPORT VIA PIPELINES**
49110	Passenger transport by inter-urban railways
49120	Freight rail transport
49211	City bus services
49212	Urban and suburban railways passenger transport services
49221	Express bus services
49222	Employee bus services
49223	School bus services
49224	Taxi operation and limousine services
49225	Rental of cars with driver
49229	Other passenger land transport not elsewhere classified (n.e.c.)
49230	Freight transport by road
49300	Transport via pipeline
50	**WATER TRANSPORT**
50111	Operation of excursion, cruise or sightseeing boats
50112	Operation of ferries, water taxis
50113	Rental of pleasure boats with crew for sea and coastal water transport
50121	Transport of freight over seas and coastal waters, whether scheduled or not
50122	Transport by towing or pushing of barges, oil rigs
50211	Transport of passenger via rivers, canals, lakes and other inland waterways
50212	Rental of pleasure boats with crew for inland water transport
50220	Inland freight water transport
51	**AIR TRANSPORT**
51101	Transport of passengers by air over regular routes and on regular schedules

51102	Non-scheduled transport of passenger by air
51103	Renting of air-transport equipment with operator for purpose of passenger transportation
51101	Transport freight by air over regular routes and on regular schedules
51202	Non-scheduled transport of freight by air
51203	Renting of air-transport equipment with operator for purpose of freight transportation
52	**WAREHOUSING AND SUPPORT ACTIVITIES FOR TRANSPORTATION**
52100	Warehousing and storage services
52211	Operation and terminal facilities
52212	Towing and road side assistance
52213	Operation of parking facilities for motor vehicles (parking lots)
52214	Highway, bridge and tunnel operation services
52219	Other service activities incidental to land transportation (n.e.c.)
52221	Port, harbour and piers operation services
52222	Vessel salvage and re-floating services
52229	Other service activities incidental to water transportation (n.e.c.)
52231	Operation of terminal facilities
52232	Airport and air-traffic-control activities
52233	Ground service activities on airfields
52234	Fire-fighting and fire-prevention services at airports
52239	Other service activities incidental to air transportation (n.e.c.)
52241	Stevedoring services
52249	Other cargo handling activities (n.e.c.)
52291	Forwarding of freight
52292	Brokerage for ship and aircraft space
52299	Other transportation support activities (n.e.c.)
53	**POSTAL AND COURIER ACTIVITIES.**
53100	National postal services
53200	Courier activities other then national post activities

4.3 Principal Statistics of Logistics Sub-sector Activities
4.3.1 Transportation and Storage Services, 2005 to 2017

Year	Value of Gross Output	Value of Intermediate Input	Value Added	Total no. of persons engaged	Salaries & Wages Paid	Value of Fixed Assets
	(RM'000)	(RM'000)	(RM'000)		(RM'000)	(RM'000)
2017	120,745,185	73,036,666	47,708,519	437,926	16,245,905	188,998,901
2015	109,237,374	65,490,249	43,747,125	411,273	14,254,121	168,941,099
2010	76,319,321	44,905,830	31,413,491	312,962	9,048,511	89,524,032
2005	51,859,773	34,560,292	17,299,481	214,257	5,413,423	52,252,792

4.3.2 Train Services, 2005 - 2015

Year	Value Of Gross Output	Value of Intermediate Input	Value Added	Total no. of persons engaged	Salaries & Wages Paid	Value of Fixed Assets
	(RM'000)	(RM'000)	(RM'000)		(RM'000)	(RM'000)
2015	1,036,124	705,131	330,993	7,554	296,161	2,002,246
2010	594,850	359,556	235,294	6,428	187,310	4,186,086
2005	672,341	416,443	255,898	6,368	185,300	4,264,979

4.3.3 Freight Transport by Road, 2005 - 2015

Year	No of establishments	Value of Gross Output	Value of Intermediate Input	Value Added	Total no. of persons engaged	Salaries & Wages Paid	Value of Fixed Assets
	(RM'000)	(RM'000)	(RM'000)	(RM'000)		(RM'000)	(RM'000)
2015	12,518	21,183,034	13,360,243	7,822,791	113,688	3,310,088	9,844,014
2010	7,761	13,875,102	8,615,205	5,259,979	89,630	2,012,270	6,702,545
2009	1,898	10,050,129	7,050,756	2,999,373	56,435	1,353,376	3,766,194
2008	1,969	10,197,591	7,107,034	3,090,557	5,842	1,214,142	3,131,699
2006	1,938	6,593,793	4,281,140	2,312,563	48,161	1,066,137	2,509,869
2005	5,619	7,149,562	4,631,483	2,518,079	62,459	1,147,814	2,793,972

Note: Data for 2006, 2008 & 2009, coverage refers to cut-off where establishment with revenue RM500,000 and above.

4.3.4 Shipping & Forwarding Agencies, 2005 - 2015

Year	No of establishments	Value of Gross Output	Value of Intermediate Input	Value Added	Total no. of persons engaged	Salaries & Wages Paid	Value of Fixed Assets
		(RM'000)	(RM'000)	(RM'000)		(RM'000)	(RM'000)
2015	2,124	11,461,160	7,744,616	3,716,544	40,654	1,523,124	2,085,835
2010	1,450	7,136,031	4,699,039	2,436,992	28,430	829,023	1,139,994
2008	1,025	6,215,256	4,553,113	1,662,124	17,937	551,044	699,202
2006	1,019	4,363,501	3,046,889	1,316,612	17,481	509,259	995,988
2005	976	4,087,703	3,035,277	1,052,426	15,689	395,884	544,359

Note: No survey was conducted in 2007, 2009, 2012, 2013 and 2014

4.3.5 Transportation & Storage Services by Activities, 2010, 2015, 2017

Activities	Year	Value of Gross Output	Value of Intermediate Input	Value Added	Total no. of persons engaged	Salaries & Wages Paid	Value of Fixed Assets
	(RM'000)	(RM'000)	(RM'000)	(RM'000)		(RM'000)	(RM'000)
Total	**2017**	**120,745,185**	**73,036,666**	**47,708,519**	**437,926**	**16,245,905**	**188,998,901**
	2015	109,237,374	65,490,249	43,747,125	411,273	14,254,121	168,941,099
	2010	76,319,321	44,905,830	31,413,491	312,962	9,048,511	89,524,032
Land Transport	**2017**	**30,853,741**	**19,460,440**	**11,393,301**	**201,694**	**4,913,380**	**18,199,224**
	2015	26,689,259	16,303,948	10,385,311	184,125	4,252,126	15,628,792
	2010	17,675,338	10,666,434	7,008,904	150,248	2,682,380	12,251,773
Water Transport	**2017**	**18,792,410**	**12,445,733**	**6,346,676**	**29,714**	**1,571,620**	**32,699,589**
	2015	16,511,596	10,357,296	6,154,300	28,464	1,333,099	29,890,138
	2010	12,136,812	7,422,845	4,713,967	24,042	1,086,854	27,041,332
Air Transport	**2017**	**24,783,977**	**1,840,716**	**8,376,841**	**41,152**	**3,109,647**	**41,286,296**
	2015	23,851,754	17,863,632	5,988,122	40,543	2,698,654	38,300,265
	2010	19,717,309	14,798,698	4,918,611	28,963	2,231,220	18,826,868
Warehousing & support activities for transportation	**2017**	**41,272,353**	**19,686,666**	**21,585,687**	**132,005**	**5,564,199**	**95,592,541**
	2015	38,100,759	18,640,405	19,460,353	125,928	5,016,290	83,966,251
	2010	23,882,911	10,371,731	13,511,180	80,704	2,355,330	30,687,503
Post & courier services	**2017**	**5,042,705**	**3,036,691**	**2,006,014**	**33,361**	**1,087,059**	**1,221,251**
	2015	4,084,006	2,324,968	1,759,038	32,213	953,952	1,155,654
	2010	2,906,951	1,646,121	1,260,830	29,005	692,726	716,557

4.3.6 Transportation & Storage Services by State, 2017

Year	Value Of Gross Output	Value of Intermediate Input	Value Added	Total no. of persons engaged	Salaries & Wages Paid	Value of Fixed Assets
	(RM'000)	(RM'000)	(RM'000)		(RM'000)	(RM'000)
Total	120,745,185	73,036,666	47,708,519	437,926	16,245,905	188,998,901
Johor	9,280,790	5,461,938	3,818,852	50,646	1,524,910	16,085,557
Kedah	1,393,608	752,637	640,971	10,138	199,265	671,980
Kelantan	293,257	157,143	136,115	4,622	65,624	213,239
Melaka	919,791	540,317	379,474	6,197	144,804	437,621
N Sembilan	1,195,791	724,378	471,414	8,956	213,454	597,123
Pahang	1,709,600	920,553	789,047	8,037	213,846	885,490
P Pinang	5,310,696	2,746,540	2,564,156	22,163	649,305	4,578,129
Perak	1,929,215	11,21,748	807,466	13,994	325,966	1,100,064
Perlis	146,102	70,099	76,002	1,429	23,525	34,526
Selangor	65,438,500	40,188,777	25,249,723	195,059	9,315,798	108,874,588
Terengganu	1,549,415	845,372	704,043	6,032	150,571	2,553,711
Sabah	3,543,906	2,115,602	1,428,304	28,813	605,016	1,754,730
Sarawak	7,043,956	4,236,141	2,807,815	35,420	999,958	6,897,613
WP K Lumpur	19,681,214	12,386,413	7,294,801	44,147	1,744,107	42,402,252
WP Labuan	1,277,597	750,480	527,116	1,932	58,766	1,909,401
WP Putrajaya	31,746	18,527	13,219	841	10,974	2,877

4.3.7 Persons Engaged, Salaries & Wages by Category, 2017

Category of Workers	No. of persons engaged			Salaries & Wages Paid
	Total	Male	Female	(RM'000)
Total	**437,926**	**338,464**	**99,462**	**16,245,905**
Total working proprietors and unpaid family workers	**49,701**	**44,450**	**4,251**	**-**
Total paid employees (full-time)	**382,778**	**288,388**	**84,390**	**16,164,115**
• **Manager, professional and researcher**	46,291	34,235	12,056	5,039,077
• **Technicians and associate occupations**	33,423	28,130	5,293	1,979,923
• **Clerical and related occupations**	205,637	144,988	60,649	6,708,454
• **Elementary occupation**	97,427	81,035	16,392	2,436,660
Paid employees (part-time)	**5,447**	**4,626**	**821**	**81,790**

4.3.8 Persons Engaged, Salaries & Wages by Skill Category & Sex, 2017

Category of Skills	No. of persons engaged			Salaries & Wages Paid
	Total	Male	Female	(RM'000)
Total	382,778	288,388	94,390	16,164,115
*** Skilled**	79,714	62,365	17,349	7,019,000
**** Semi-skilled**	205,637	144,988	60,649	6,708,454
***** Low-skilled**	97,427	81,035	16,392	2,436,660

* Includes managers & professionals and technicians & associate professionals

** Includes clerical support workers, service & sales workers, craft & related trades workers and warehouse & machine operators & cargo hands.

*** Includes elementary occupations.

4.3.9 Capex & Fixed Asset Value of Transportation & Storage Services, 2017

Sub-sector	Capital expenditure	Disposal	Depreciation	Value of fixed assets
	(RM'000)	(RM'000)	(RM'000)	(RM'000)
Total	**46,755,338**	**5,701,636**	**8,087,055**	**188,998,901**
Land Transport	13,785,930	164,758	1,785,950	18,199,224
Water Transport	12,058,585	715,869	1,323,945	32,699,589
Air Transport	13,083,855	4,678,854	2,145,675	41,286,296
Warehousing and support activities for transportation	7,637,930	134,332	2,640,202	95,592,541
Post & courier services	189,038	7,823	191,283	1,221,251

5. Issues & Challenges

While the logistics sector in Malaysia appears to be growing and its potential looks promising, it is constantly facing complex issues and challenges. Indeed, despite the potential growth of the sector, local stakeholders have identified several problems arising from the fragmented development of logistics and supply chain practices, as well as the uncoordinated implementation of stringent policies and regulations. These problems can arise in different ways, but for better understanding they can be categorised into segments to indicate the triggering source or origin, namely the following:

1) **Institutional and Regulatory mismatch**
   - **Resulting in lack of coordination and incurring unnecessary regulatory burden**

2) **Processes and Procedures in Cargo Clearance**
   - **Resulting in uncertainties & disruptions and increase of logistics cost**

3) **Inefficient Road Connectivity Network**
   - **Resulting in road congestion and low turn-around in delivery planning**

4) **Incompetence & Unskilled manpower**
   - **Resulting in non-compliance processes and loss of productive time**

5) **Low adoption of digitalisation**
   - **Resulting in inefficient services and non-competitive ecosystem**

5.1 Identified Issues in the Logistics Sub-sectors

1) Institutional and Regulatory mismatch

- Resulting in lack of coordination and incurring unnecessary regulatory burden

Basically, there is still a lack of a uniform and standardised way of implementing regulations, which leads to various gaps in the whole process. Therefore, a comprehensive approach to standardising the forms of regulations is crucial to facilitate the smooth movement of goods in national and international logistics chains.
In quoting one forwarding agent who claimed that:

"The frequent changes in the procedures imposed by the authority always creating difficulties for traders"

and

"With so many rules and regulations imposed by the Customs in clearing goods, these rules are not able to prevent 'fraud and discrepancies'..."

Another lorry driver also stressed that:

"There were conflicts between authorities in enforcement, which led to an unethical way of solving problems and very often to delays in the delivery of goods."

Despite regular meetings between industry players and the authorities involved in the coordinating and monitoring of policies and regulations related to logistics activities, there seems to be lack of understanding and follow-up to address identified problems. Problems that require a cross-cutting approach (involving different authorities) are not considered holistically and the search for a solution is left to a single authority. In most cases, identified problems or problem areas are addressed "half-heartedly" or even left unsolved, when regulatory burden becomes a feature of many such problems.

When information about the activities of different sectors was not made known to all sectors, thus hindering opportunities for joint-venture and cooperation in the same direction (e.g. on how their services and facilities can contribute to the success of the proposed development and how they can contribute to positive participation). This is important because through the information received, practitioners can then suggest how they can participate in the new business opportunities.

2) Processes and Procedures in Cargo Clearance

- Resulting in uncertainties & disruptions and increase of logistics cost

Customs has made significant progress in integrating traders to achieve completely paperless custom clearance and trade facilitation through EDI. However, there are still problems, firstly with the costly EDI pricing and fee due to non-transparent mark-ups by freight forwarders, and secondly with the overall performance and functionality of the system.

It was only years ago that the introduction of the uCustoms system was supposed to eliminate these problems, but the system was discarded because it was introduced too slowly and it was expected that all other relevant government agencies (OGA) would be fully integrated into the system. The uCustoms system was supposed to overcome some of the major weakness and deficiencies of the previous Customs Information System - SMK (acronymn for Sistem Maklumat Kastam).

It is important to strengthen the linkages and integration between transport and logistics networks to promote efficient and effective logistics practices and development through the use of ICT systems.

3) Inefficient Road Connectivity Network

- Resulting in road congestion and low turn-around in delivery planning

The planning and construction of roads in our country began in the British era and the country's transport network today is well developed but very diverse. Malaysia's road network covers 290,099.38 km, including 2,016.05 km of expressways (in 2021). The country's main highway stretches over 800 km, from Singapore to the Thai border. Indeed, Peninsular Malaysia (West Malaysia) has an extensive road network, while the road network in Sabah and Sarawak can be considered less developed.

Of the 290,099.38 km, only 20,017.97 km are federal roads and 247,027.61 km are state-administered roads, along with a total length of 2,016.05 km of expressways. The country's longest highway, the North -South Expressway (NSE), stretches 800 km from the Thai border to the Singapore border. The second longest highway is the East - Coast Highway, which stretches almost 500 km from Kuala Lumpur to Kuala Terengganu. Recently, the 2015 budget approved the construction of the Pan-Borneo Highway. The highway project covers 1,663 km (936 km in Sarawak, 727 km in Sabah) mostly mirroring the existing trunk road, and involves widening the current three-metre wide single-lane road to a dual-lane highway.

There are two ports listed in the top 20 busiest ports in the world, namely Port Klang (PKG) and Port of Tanjung Pelepas (PTP), which are the second and third busiest ports in Southeast Asia after the Port of Singapore respectively. Port Klang is the busiest port in Malaysia and the thirteenth busiest port in the world in 2021, handling over 13.7 million TEUs. Port of Tanjung Pelepas is the second busiest port in Malaysia and the sixteenth busiest port in the world in 2021, handling over 11.2 million TEUs.

Transportation is the main activity in seaports as it enables the rapid transfer of goods from ships to other modes and provides essential transport links. Over the years, the role of the seaports has expanded and the relationship between seaports and the hinterland has changed significantly, especially since the early 2000s. As a result, seaports have become increasingly disconnected from the hinterland cities. The increasing intensity of industrial activity in seaports, combined with their internal growth, the lack of available land for expansion and environmental constraints, has led to port facilities becoming more remote.

Therefore, a well-planned road network is one of the most important infrastructures in any country, as it provides the opportunity to move people and goods in the most efficient and effective way. Therefore, the integration of road transport is an essential prerequisite for a modern seaport where a multimodal transport system is developing.

Several problems have been identified that prevent our road transport system from meeting the global standard of green logistics. The biggest problem is the connectivity and accessibility of the road network leading to the seaports, especially the larger terminal at Port Klang. As the seaport is the “last mile” for goods transport and handling, connectivity and accessibility are not efficient and cause congestion on the roads.

The criteria for road design, such as lane width, load carrying capacity standards and intersections, have not been properly established. The narrow width of the lanes is not suitable to cope with the capacity of freight traffic, given the annual increase in traffic.

The introduction of tolls on the roads leading to the seaport is another factor, as the toll has to be paid out of one's own pocket and the toll seems relatively high compared to other toll roads. Other factors could be the longer and uncomfortable gradients on the newer roads that were built later. The longer journey time does not justify the toll paid.

As a result, drivers of commercial vehicles look for alternative routes to avoid the toll, which leads to massive congestion on these roads overall. In addition, accidents often occur, further exacerbating road congestion.

Understanding and knowing the traffic and usage patterns of commercial vehicles is crucial when planning new roads in the road network with a view to supposedly efficient road highways.

4) Incompetence & Unskilled manpower

- Resulting in non-compliance processes and loss of productive time

It is a widely known fact that there are not enough qualified and competent workers in the logistics sector. For decades, professional trade associations have repeatedly raised this problem with the government, with no solution in sight. School leavers cannot console themselves with wanting to work in the sector. Lorry drivers in the haulage companies are also in high demand, despite the high salary.

Recent feedback from existing freight forwarders is that the majority of the haulage companies do not have sufficient know-how and professional skills to introduce new product offerings and innovative logistics solutions for their well-paying customers.

In general, there is a great shortage of professional and skilled labour in the logistics sector, including the warehousing and cargo handling sub-sectors. Traditionally, the workers come from within the sector itself, and are recruited from the ranks of junior workers who have gained their professional experience while working. The rapid expansion of the logistics sector in the country for the past few decades has led to a real shortage of labour. Companies with sound management practices have initiated training programmes with internships woven into them. Without much input from the government, the Trade Association has launched its Skilled Manpower Training Programme, which provides C-level training to employees. Unfortunately, there is still a lack of training for lower level staff, especially those involved in cargo handling.

Customs has also improved the qualification programme for customs clearance agents by making the requirements for renewal of the customs license mandatory when the licence expires. Licensed forwarding agents are now required to have at least 2 board members who are qualified in the KEK (Customs Agent Course) training programme at Universiti Utara Malaysia (UUM). In 2004, Customs took the initiative to create a Smart Partnership Programme and mandated UUM to conduct training courses for the logistics sector, including the shipping sub-sector on 3 August 2008. The executive course for forwarding agents comprises 21 modules requiring 75 contact hours. The non-executive course consists of 15 modules requiring 57 contact hours. A special course has also been tailored to the shipping sector. This course consists of 6 modules requiring 13 contact hours.

The rapid expansion of the logistics industry and the lack of emphasis on service capabilities have led to the need for a more proactive and innovative management approach in logistics and supply chain companies. It is now becoming an obvious challenge to implement more sophisticated management and new marketing solutions to bring the logistics industry up to global standards.

Currently, there does not seem to be a single established source of logistics information and data. Each sector has its own limited data, mostly accessible only to the established members of the respective network or trade associations. Newcomers, and even workers and students do not have access to documents and information for their research and training purposes.

5) Low adoption of digitalisation

- resulting in inefficient services and non-competitive ecosystem

The logistics industry in Malaysia is still facing various challenges, such as inadequate infrastructure and limited internet connectivity, low adoption of digitalisation. Beside facing our lagging in information communication and technology (ICT) infrastructure behind global standards, the industry lacks expertise and skilled workers, especially in the design of the supply chain network, integrated warehouse management and information technology application.

Given the immense variety of economic goods and the different modes of transportation, there are various regulations concerning the governance of the logistics industry, which slows down the adoption of digitalisation and innovation. External shocks, such as the COVID-19 pandemic, have also disrupted the industry. The ensuing lockdown has restricted export-import activities globally which severely affected the logistics industry in the country.

One of the main problems faced by local service providers is the inability to engage in international logistics activities due to limited connectivity, overseas business network and capital investment. Although there are international freight forwarders (IFF) in the market, their existence is not beneficial to local service providers. This is because IFF is not transparent to local service providers in terms of sharing their knowledge and development plans to improve the industry. The limited supply of logistics services would restrain the growth of the small domestic market. As a result, they are limited to operating within the country's borders.

There is also a lack of information of the industry players, facilities, services and capabilities of the sub-sectors. A record of such useful information is important so that the coordinating body could analyse the shortcomings of each sector and suggestions to rectify such weaknesses. The expansion plans, new IT enhancements and expansion of activities of logistics providers, both international and local should be more transparent to the industry players so that they are updated to the latest news of the industry. The industry database is also crucial for accurate assessment of the industry, better monitoring, assisting company in investment decision, and improve decision making.

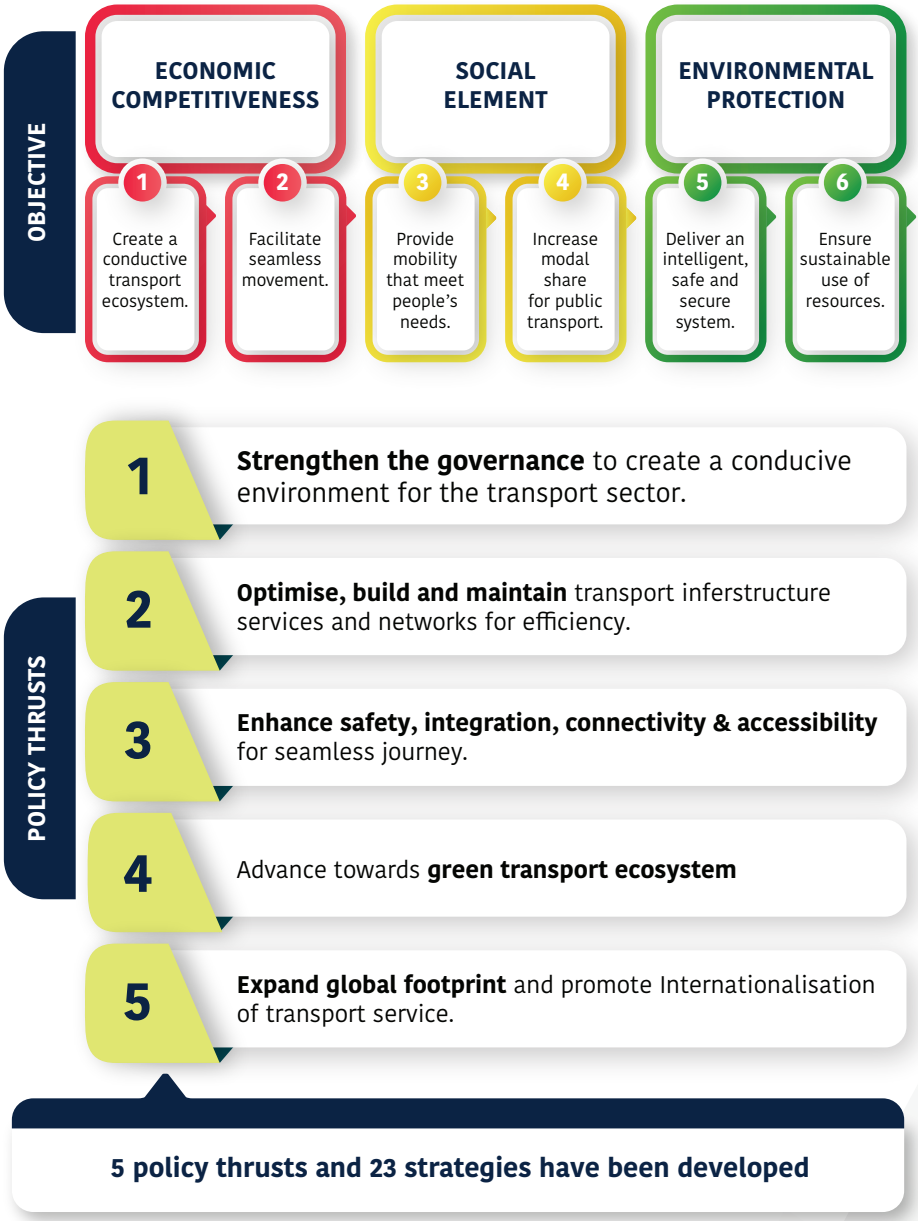
6. Way forward

Key Activities & Programmes

The Logistics and Trade Facilitation Master Plan (2015 – 2020) aims to provide the strategic framework and roadmap for strengthening Malaysia's position as the preferred logistics gateway in Asia. The master plan envisages that by harnessing the potential of e-commerce and adopting digitalisation, the competitiveness and efficiency of the logistics industry will be enhanced. This will pave the way for new advanced and automated logistics services.

The Twelfth Malaysia Plan (2021 – 2025) aims to further improve the efficiency of transport and logistics services by prioritising efforts towards an integrated, affordable, reliable and seamless transport system. In addition, the plan aims to increase the competitiveness of the industry and strengthen the institutional and regulatory framework of the sector. Improved efficiency of transport and logistics services would spur sustainable economic development and increased prosperity of the people.

During the Eleventh Malaysia Plan (2016 – 2020), the transport infrastructure network was upgraded, to ensure better connectivity and quality of services. The improvement of the transport system led to an increase in the capacity of ports and airports. Transport initiatives were streamlined through the introduction of the National Transport Policy (NTP), 2019-2030. Efforts have been made to facilitate first and last mile connectivity and digitise logistics services.



National Transport Policy (NTP), 2019-2030

Given the rapid growth of the transport sector in the last 10 - 20 years and Malaysia's position as a transport hub for the Southeast Asia region, there is a need for an overarching national transport policy roadmap to:

- Provide strategic direction and serve as a reference point for ministries and agencies in planning to develop an efficient, integrated and sustainable transport system;
- Consolidate and streamline initiatives and efforts towards common goals, thus contributing to an efficient use of resources; and
- Removing bottlenecks that hinder the transport sector growth, promoting domestic growth and creating a regional footprint.

Eight key trends were identified that policy should address:

Trend 1 Growing and increasing ageing population
Trend 2 Increasing urbanisation
Trend 3 Advances in real time information and digitalisation
Trend 4 Expansion of e-commerce market
Trend 5 Shift towards environmentally sustainable transport
Trend 6 Move towards bigger vessels, consolidation and containerisation
Trend 7 Increasing passenger travel and impact of Low Cost Carriers
Trend 8 Proliferation of new technology

As seen in the Twelfth Malaysia Plan, it seeks to increase the efficiency of the transport and logistics sector and further improve the competitiveness of the industry through various measures, part of which adopts the initiatives of the National Transport Policy (NTP), including measures to digitise logistics services.

Some of the known issues from the Eleventh Malaysia Plan are:

1) **Inadequate connectivity in the first and last mile**
2) **Non-competitive transport and logistics industry**
3) **Poor governance in transport and logistics**

Therefore, the Twelfth Malaysia Plan seeks to address these issues by adopting 3 priority areas, namely:

Priority Area A:
Ensuring integrated, affordable, reliable and seamless mobility for people.

Priority Area B:
Promoting the competitiveness of the transport and logistics industry.

Priority Area C:
Strengthening the institutional and regulatory framework.

Programmes to upgrade standards of the logistics sector

The main activities of the logistics sector are always seen in the context of transport, freight forwarding and e-commerce. In the context of raising the standards of the various sub-sectors of the logistics sector, a methodical approach should be taken in introducing an effective and useful programme for the logistics sector.

First, a programme should be conducted to engage the various sub-sectors of logistics sector, drawing an appropriate sample to gain an in-depth understanding of the business and operational issues and challenges.

This programme can take the form of a webinar, inviting participants from the different sub-sectors of logistics, i.e. transport and haulage companies, freight forwarders, customs forwarding agents, forwarding agents, international freight consolidators, warehouse operators and probably packaging companies, to a general online workshop where speakers from different companies speak on the selected topics.

Based on these online workshops, we can invite participants to another engagement workshop with more detailed presentations, where there would be interactions between the speaker and the participants. These interactions would form the basis for identifying operational issues and challenges. The implementation of such a programme would have a positive impact on the industry as logistics operators would be able to highlight the various operational problems and challenges encountered in the delivery of their daily logistics services. These could be picked up by the relevant authorities to further investigate the root cause of the problems.

An additional benefit for logistics companies participating in these workshops is that they have the opportunity to network with each other. Such a networking effect would strengthen relationships by allowing them to share business opportunities with each other, such as creating a pooling of freight packages with specific destinations or even receiving return freight on their outbound and return shipments.

Secondly, a tailored-made intensive workshop can be designed to provide technical assistance to the selected logistics companies. Such workshops may need to be held for a specific period of time and cover specific areas to address the problems of the selected logistics companies. Specific areas may be:

- **Multimodal transport operations**
- **Airfreight operations**
- **Cross-border operations**
- **International freight operations**

In this type of workshop, there must be some form of commitment between the logistics companies and the employee in question to be trained. Such an agreement would provide assurance that they can release the employee for the training while they are still employed by them. In addition to this agreement, the trained employee must periodically submit a progress report on their progress to the logistics companies since they began participating in the programme.

However, the trainers for this programme must come from reliable training academies or institutions that are capable of effectively imparting the essential knowledge and technical skills. In this regard, the government agency responsible for the skills upgrading or training programme should provide the necessary funding. This funding should include the rental of training rooms and equipment, trainers' fees and training materials.

To help the logistics sector attract school leavers to the logistics industry, special events can be organised during school holidays for these students to attend a 3 - 5 day workshop that will give them a better understanding of the logistics business. Such a programme can also be sponsored by the trade associations or even by certain logistics companies that offer participants the opportunity to be hired after completing their school education. Strengthening close ties between schools and the logistics industry is key to ensuring a sufficient labour supply.

Third, but not least, to launch a nation-wide programme to provide technical assistance to small and medium-sized logistics companies that want to modernise and improve their business model, capacity and staff skills. In addition to the capacity enhancement training offered in the second initiative, this programme will be extended by providing the logistics companies that sign up to participate in this programme with an expert mentor who will support the management of participating logistics companies to introduce and adopt the necessary tools and management skills in the working environment of these companies. The core aspect of digital infrastructure, such as ICT networks, data infrastructure, digital applications and devices may be suitable for logistics companies to invest in. The use of digital technologies in logistics offers these companies the opportunity to increase the first and last mile efficiency, keep customers informed and ensure that service are delivered efficiently and effectively. This helps the logistics companies to offer their services more competitively and thus generate higher revenues.

While the financial aspect of logistics companies needs to be fully grasped, the consultant can look for suitable financial working capital to support the expansion of the business activities of these logistics companies. The involvement of certain banks or financial institutions in this programme could be mutually beneficial.

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