Detailed insight of air cargo logistics in transportation, & a panorama of air cargo digital initiatives.

Submitted for the partial fulfillment of the requirement

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In

International Transportation and Logistics Management

By

KUSUMA SURYA TEJ

Reg no. 1905305020

Under the Guidance of

Dr. YOGAMALA

(HOD MBA, Professor SMM, IMU)

—

SCHOOL OF MARITIME MANAGEMENT

INDIAN MARITIME UNIVERSITY

—

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DECLARATION

I, **KUSUMA SURYA TEJ Reg No. 1905305020** student of School of Maritime Management, INDIAN MARITIME UNIVERSITY-COCHIN hereby declares that this project report titled "**Detailed insight of air cargo logistics in transportation, & a panorama of air cargo digital initiatives**" submitted in partial fulfillment of the requirement for the degree of "**Master of Business Administration in International Transportation and Logistics Management**" is my original work carried under the guidance of my project guide. It has not formed the basis for the award of any degree/diploma or associateship of any University/Institution. The information submitted is true and original to the best of my knowledge.

Date: 29-06-2021
IMU Kochi
KUSUMA SURYA TEJ

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"When a person is helped and guided his or her heart is bound to pay gratitude"

It gives me pleasure to express my thanks to all those who helped me with the successful completion of this project. First of all, I thank GOD ALMIGHTY, for all the blessings showered on me in every walk of my life.
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Chapter 1
Introduction

The term Logistics appeared during the Second World War to foster a large supply of weapons, food, military soldiers battling from different sides of the world. This concept of logistics has increased and entered the world of business as business logistics.

Without the support of logistics, completion of marketing or manufacturing is very difficult. Explaining its difficulties logistics involved a lot of activities such as freight, warehousing, transportation, material handling, inventory control marketing, customer service, effective packaging, etc. So there's a lot of information flow in this system and to maintain, good scientific planning controlling and supervision of material-person-energy is required.

Logistics is a business of providing cargo that should be available at right time at the right place with the right type of products and services at the right price in the right condition. When all the services are cost-effectively provided to the customer reducing time and adding value to the product which is called to be the transfer process. Logistics is also concerned about getting the products and services where there is a need and where there is a desire. In this transfer process of products, some issues such as time, security, and necessity - the concept of air freight have come through.

The transportation of goods from one point of the globe to another by air which is regular and fast within a short span of few hours has helped to raise the standards of living. This also helped in industrial development in many of the underdeveloped and developed countries. To match the increase in demand air freight transportation plays a crucial role. In the present scenario, air freight carriers carry a lot of products that generally have a short lifespan, perishable goods, valuable goods, medicines, etc.

In the present situation of the covid-19 pandemic, air cargo transportation played an important role in the transportation of medicines, pharma APIs, testing kits, vaccinations, relief material, oxygen suppliers, ventilators, etc, while the country is battling against this pandemic.

Two important factors that contribute to the positive growth of the air cargo industry are Gross Domestic Product (GDP) and those changes that happened in the Indian product market which moves the value-added chain up and down.

In recent years air freight transportation had implemented several changes in processes and adding modernization techniques like digitalization, which also improved trade through air freight. International connectivity is also fetched up and there is transportation taking place. Some of the government schemes like UDAN and Krishi UDAN which is a regional airport development help in connecting regional areas with the airport in the transportation of perishable goods.

We can look at the statistics of the fright movement in airports handle in India. In the financial year, 2020 Indian airports handled 3.33 million metric tons while in the financial year 2019 airports handle around 3.75 metric tons. By the year 2022 2023 ICAI forecast to be increased to 4.4 metric tons movement in Indian airports.

Objectives

The objective of the project “Detailed insight of air cargo logistics in transportation, & a panorama of air cargo digital initiatives” is to study about

- Import and export logistics applications

- Air cargo logistics
- Stake Holders of air freight
- Import & export documentation and procedures
- UDAN “regional connectivity scheme” by Government of India
- How can digitally transform the air cargo industry?
- Benefits of digitizing the supply chain of air cargo carriers.
- Projects and initiatives by IATA.
- problems and suggested solutions for the system.

Research Problem

When it comes to the air freight development, we can say about how cargo movement has been increasing not only in terms of the number of items but also in different directions. There is a lot of cargo movement from one place to another. The primary air transportation system is beginning with the motto of passenger carrier and now it is predominantly a passenger operating system than a freight carrier. When there is a comparison between mode of transport as of air transport and other means of transport the financial strength of air transport is entirely an economy dependent on the passenger’s movement. Whereas in another mode of transport like water and rail the financial strength depends upon the right movement.

Countries economy has a greater advantage because of logistics. When there is logistics movement the wealth of the country is generated by adding value and creating and competitive advantage between countries. The advantage of India is that it has a good geographical location, moraine tradition land mass and large manufacturing and technology basis. With the help of these advantages, India should promote value-added export of cargo by competing with other countries. By increasing the productivity of airport labor and cargo handling equipment, the

performance of Indian airports will be increased and used to the international standard.

Now cargo movement by air is not a luxury. The transportation cost by air can more be optimized by reducing inventory investment, less packing cost, speed delivery, and eliminating the risk of pilferage.

Even though the technology has a boost and airports are increasing with technology and optimizations, there are some difficulties with airports that constructive achieving technology or digitalization wouldn't matter:

~ Oil cost. In the aviation industry, the cost of fuel has been a major issue. The situation happened earlier the conflict between the US and Iran has a major impact on the price race of crude oil and unfortunately, all those prices increased on crude oil are affecting many industries and even consumers. This is a situation where it can't be solved.

~ Security. Yes, across the aviation industry increasing security is the main necessity in the airport. Many of them can be handled by the means of technology and digital tools which are used as detective types of equipment in the airport. The international air transport association recorded and year on year fall of air flight in 2019. Even though the technology is increasing challenges like moving dangerous cargo, or threat of terrorism, or the risks of cyber-attack on air traffic control systems remain.

~ Capacity. When it comes to capacity air transportation has a very low capacity compared to other modes of transports. When it comes to the shipping industry there were different kinds of vessels for a different mode of product used as tankers carry liquids bulk carriers. Container carriers just changed the world trade economy. When it comes to the air transportation capacity maintains to below as there are no many variant kinds of aircraft for movement of goods.

When this comes to problems that came out of technology and take some time to get registered with both the customer and the logistics team and also updated with the systems. They are

~ e-WAB. For carrying off all-cargo freight where electronic air waybill became the default contact for movement. This started on 1st January 2019. This is a part of the technical development ongoing process in adding digital to the entire supply chain. This is introduced so that several errors will be eliminated and the process becomes fast. The manual and paper processes are reduced which is supporting the scenario of industry aiming to become eco-friendly. The biggest challenge here ear is when there is an introduction the adapting and adopting should be handled. Here we should also check that the critical information is being uploaded timely and correctly.

~ E-commerce. Understanding the demand and need of certain goods in certain areas We don't wide range from luxury to needy. In process of reaching these demands, e-commerce became an important network to distribute goods from their warehouses all over the country sometimes the world. This increased air freight movement inside the country a lot. While the recent reports say that the expected total of the global e-commerce market would be e dollar 4.89 trillion in 2021. But when we compared the growth rate of global E-Commerce sales which is used to be 22.22% in 2019 and decreased to a 16.5% growth rate in 2021. This might be the case of pandemic occurred. The forecast also says that large markets like India and China will decrease subsequently compared with recent years while most other countries experience growth in e-commerce.

Hypothesis

Assuming steady and study flow with which the forecasting is connected, seems to have a possibility of achieving or may not reach the forecast predicted.

There is a need for air freight industry development and it's an ongoing process. This provides greater connectivity to international trade and also helps other means of aviation development.

Introducing of e-commerce had made the air freight industry e should improve in their warehousing documentation and customs so that the products faster over time. The recent reports say that the expected total of the global e-commerce market would be e dollar 4.89 trillion in 2021.

The introduction of digital and eliminating errors is an adopting task which getting through air freight movement process in a faster manner.

Scope and Coverage

The scope of the project to have a good insight on export and imports operations and documentation. The improving air freight transportation with technology and digitalization, inducing this new process into airports in India.

Chapter 2

Review Of Literature

On working with this specific topic of air freight, a review on the studies of implementation of technology in air freight movement logistics warehouses which subsequently increase the efficiency.

Air cargo logistics in India.

In accordance to improve the global competitiveness of India, there should be trade growth. Whereas there stands a strong relationship between the growth in trade internationally and the logistics infrastructure. So how to increase the trade growth there should be e a supporting in infrastructure requirement it which improve logistics process. This also depends on the availability of the infrastructure which is also an important point for foreign direct investment. F an effective logistics infrastructure is maintained properly there can be a reduction of cost of transportation, movement of products and services maintaining speed and efficiency.

During the last few years, the product life cycle has been reduced, and increasing in the rapid delivery system has demand which increases the demand for air cargo transportation. Introducing Business models like just-in-time manufacturing and global outsourcing not only changed the market with more speed of inventory movement which is not a compromising process but also there is a rapid growth in the air freight logistics business. Importing of raw materials parts inputs are components to industries and delivering the final products which is also a continuous business of value-adding chain. Reducing inventory cost, ease to order, reducing intermediary cost, delivery, and Management 8 benefits of an effective supply chain management which also provides an effective and competitive business.

The quantity of air cargo transported is around 3% of total cargo moment but when it comes to the value of trade it's about 35% which has good economic health.

Research says that there is 60% of operations of supply chain businesses can be digitalized to get a good efficiency in the logistics business. But as of now the logistics business which is involved with the supply chain has been digitalized over 40% of office operations. Implementation of data sharing and visibility through digitalization will benefit air cargo carriers. To make it easy for the customer's digitalization can help in monitoring and identifying where the cargo is located with real-time location tracking. In a removing of lot manual reverse which reduces errors.

METHODOLOGIES ADOPTED

The methodology adopted of this project is a kind Literature survey and data analysis research method. Hear the literature was collected from different research material sources. All this collected data from research generals and experimental data are used as a key for data analysis at a primary level.

SOURCES OF DATA COLLECTION

I have divided my source of Data collection sources into two, primary data and secondary data.

In this study of project report, primary data was collected from formal interviews, news headlines, professionals' discussions about the topic.

Secondary data for the study of the project was collected from company records, books, research reports, websites, company publications, and some of the journals.

Research gap

The period of the study of this project is during June 2021, so the context required for the project so far as concerned to be considerable enough to comprise all of my work. However, one who stands in a race of air freight logistics should have efficiency with effectiveness in the process. The involvement of e-commerce and a lot of cargo movement is happening at the warehouse where receiving, packing, checking, and outbound will take place which also affects efficiency.

Many problems can be reduced by digitalization, artificial intelligence, atomization, etc. All these will bring a lot of changes with reducing human errors and increasing efficiency. Customer reviews or solutions is another factor that improves the supply chain management process in accordance with the customer.

Chapter 3

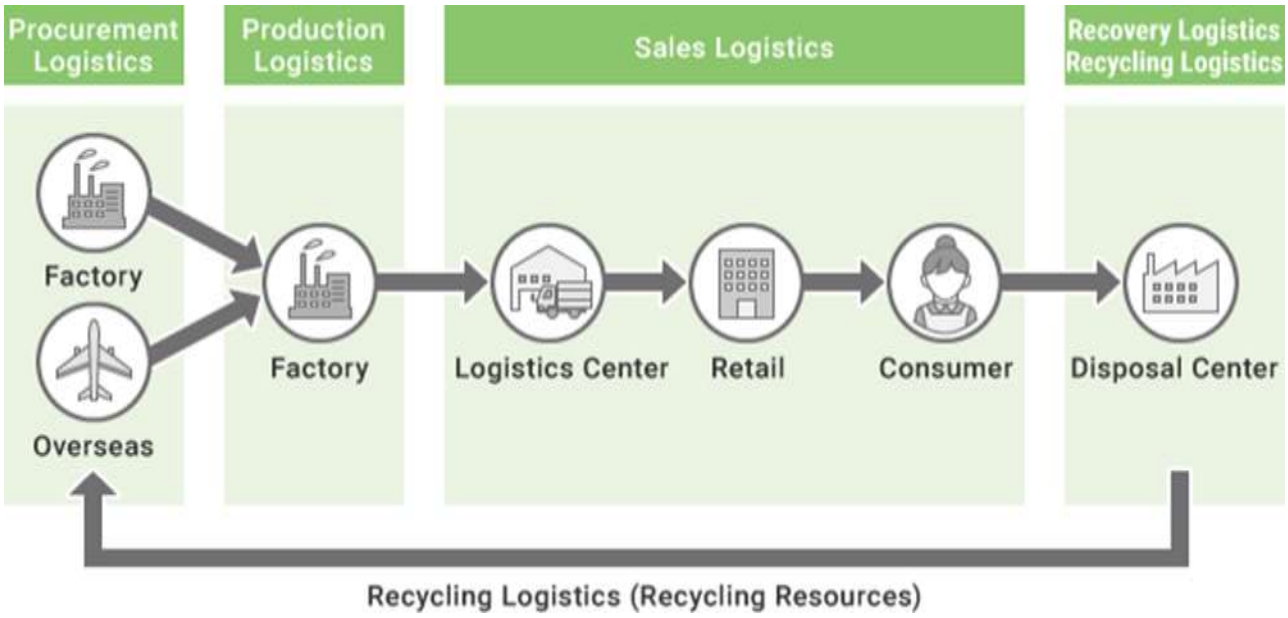
Industrial profile

As we already discussed logistics is defined as getting products and services where they are needed. In the 19th century originally the term logistics was originated from military activities. In this century during the Second World War, there is a movement of many goods for the war. So logistics started here with the increased developments in sciences, technology, and supply chain management. As the days pass after the Second World War and increased development in manufacturing, material handling, and transporting. Dish lead to the introduction of logistics business where materials are transported from one place to another.

Adding to the industrial revolution and the introduction of many manufacturing industries also led the owners to think about the logistics done during World War and implementing those logistics as a logistics business.

Logistics can likewise be said as giving the right kind of products and administrations at the right spot, at the right value, at the time, and in the right condition. As indicated by the committee of Logistics Management, logistics comprises of the consolidated arranging, control, acknowledgment, and following of all inward and organization-wide material, component, and product flow comprising of the important data flow, mechanical and exchanging organizations close by the whole worth-added chain for the reason for adjusting to customer necessities.

Types of logistics



Procurement Logistics: Procuring Raw Materials and Parts

Procurement logistics is the flow of goods when the crude materials and parts vital for assembling are secured from providers. This field didn't draw in much consideration previously, yet now that little parcel production of an assortment of models is the principle sort of production, numerous organizations are effectively seeking after production by getting the important materials in just the essential sums at the vital occasions since it is straightforwardly associated with diminishing inventory costs.

Production Logistics: Materials Management, Distribution in Factories, Product Management, Shipping

Production logistics is the flow of goods that incorporate the management of secured parts and materials, distribution inside a plant, product management, bundling, and transportation to the stockroom. Conveyance management, distribution center dispatch management, and transportation management can be streamlined and the condition of conveyance vehicles can be overseen by easily connecting procurement logistics and deals logistics depicted later.

Sales Logistics: Delivery from Warehouse to Wholesalers, Retailers, and Consumers

Logistics normally refers to sales logistics. Previously, this was mostly delivered from delivery centers and logistics warehouses to distribution focus like wholesalers and retailers. However, presently direct delivery additionally makes up a large measure of this volume due to online shopping and e-commerce. Whether delivery through delivery centers and logistics warehouses or direct delivery from production sites, higher efficiency in transportation and delivery and contracting inventory are indispensable for delivering the necessary goods to the necessary people in the necessary quantities at the necessary time. This additionally contributes to improving customer fulfillment.

Recovery Logistics: Recovering and Recycling Products, Containers, and Packaging

On the off chance that the flow of goods from production to utilization by procurement logistics, production logistics, and sales logistics is described utilizing the circulatory system of the body, it would be supposed to be forward logistics. Then again, recovery logistics or reverse logistics is the flow that recovers and recycles products, containers, and bundling that have fulfilled their role. Like recycling logistics described later, emphasis is being placed on this flow in recycling-oriented societies.

Recycling Logistics: Recovering and Recycling Recyclable Products and Containers

Common examples of recycling logistics are recovering and recycling empty jars, plastic bottles, and old paper. Containers, bundling, old computers, and inkjet cartridges can likewise be recovered and recycled in the same manner. The importance of recycling logistics has been increasing in recent years as a measure for the environment and to effectively utilize materials like minor metals.

Objectives of logistics.

The primary objective of logistics management is to move the inventory in a supply chain effectively and efficiently to extend the desired level of customer service at any rate cost as done in parallel with waste management.

Inventory reduction

Inventory is the biggest culprit in adversely affecting the objectives of logistics management at the bottom line of an enterprise.

From a financial accountancy perspective, inventory is an asset and does not cause any appreciable disadvantage even when it is stocked in an excess quantity.

Reliable and consistent delivery performance

On-time delivery is essential to the customer to keep up his production schedule. The customer isn't interested in faster delivery of the material ahead of the production schedule.

Freight economy

Freight is a significant expense element in logistics costs. This can be reduced by receiving measures, for example, freight combination, transport mode selection, route arranging, load unitizing, and significant distance shipments.

Minimum product damages

Product damages add to the logistics cost. The reason for product damages is improper strategic bundling, frequent consignment taking care of the absence of burden unitizing, etc.

The use of mechanized material dealing with equipment, load unitization, and properly calculated bundling will reduce the product damage and satisfy the objectives of logistics management.

Quick response

This is related to the capacity of a firm to extend the service to the customer in the shortest time frame.

The use of the latest technologies in information processing and communications will enhance the decision-production capacity in terms of exactness and time, enabling the enterprise to be flexible enough to satisfy the customer requirements in volumes and varieties in the shortest time frame, hence satisfy the objectives of logistics management too.

AIR CARGO TRANSPORTATION

Airfreight Logistics is the shipment of goods by means of a chartered or scheduled air carrier. Airfreight is a mainstream choice for some companies as it ensures passage for their goods to anywhere on the planet that an airplane can travel to and land. Goods transported via air have the advantage of being taken to their last destination at high velocity which could prove advantageous if the shipment is time-sensitive. For smaller and medium-sized companies, it permits them to participate in international trade in an effective manner as larger companies. Furthermore, shipments that are transported by means of air carrier go through a higher level of security than other methods which makes it one of the most secure approaches to shipment of goods.

There are a few choices when it comes to organizing an air freight delivery:

Consolidated Freight – Where one flight contains many shipments.

Back-to-back or Direct Services – Where a flight contains one single shipment.

Charter Services – Where an entire freight plane is chartered for a single air freight delivery.

These shipments will either be placed into the hold of a regular passenger jet or in a dedicated freight aircraft, which can hold huge amounts of cargo on one flight.

Air Freight

In plenty of cases, airship cargo is arranged by an experienced Freight Forwarding Agency. Freight Forwarders contract with several companies covering sea, air, or street to ship goods on behalf of their clients. Albeit some Freight Forwarders have their warehouses and vehicles, they aren't necessarily the ones to complete the transportation. Ordinarily, they are the experts that can lead on the logistics and arrangements that will enable a smooth process giving companies peace of psyche that their goods will be delivered.

These are the general steps to receive the shipment of your goods via air freight:

- ↣ Choose an air freight company and negotiate a price to ship your goods.
- ↣ The Freight Forwarder will arrange for your goods to be collected pre-packed or will arrange for the packing to be done before transportation.
- ↣ The goods will be taken to the airport and go through Customs checks at the point of origin.
- ↣ The goods are loaded onto the plane. If being delivered with a consolidated shipment, the plane will remain on the ground until it is filled with cargo which could take a few days.
- ↣ On arrival at its destination, the shipment will go through another Customs inspection and will not be released into the country until all duty and taxes are paid.
- ↣ The shipment is delivered to you as per the agreement with your freight forwarding company.

<u>The Advantages of Air Freight</u>

There are a number of advantages for transporting goods by air. These include:

- ∝ Efficiency – Air freight is quick, particularly if you use a direct service. You can expect goods to be at their intended destination within days of sending it whilst sea freight can take several weeks.
- ∝ Good Value on Smaller Deliveries – Air freight is charged based on weight as opposed to volume which makes it more cost-effective to send smaller deliveries via air freight than by sea.
- ∝ More Options – Shipping companies can offer more options to the importer with air freight, including consols and direct routes.

- Less Potential to Damage Shipment – Providing the goods are correctly packaged, air freight is usually a better way of shipping fragile items as damage is less likely compared to sea freight.
- More Traceable – As flights are tracked, shipments are more easily traceable which can give businesses more peace of mind.

The Disadvantages of Air Freight

Depending on what exactly you're shipping and where you are shipping it to, air freight could potentially cause businesses some problems. Some of these include:

- Expense – Using air freight can be a lot more expensive than sea freight, not just for the cost of delivery but for import duty and VAT. These are calculated as a percentage of the cost of the goods plus the cost of shipping
- Logistical Restrictions – When using a consolidated freight shipment, the business will have to wait until the flight is full with other deliveries before it is sent. This can add time to the delivery with some flights only going once or twice a week to main destinations.
- Transport Restrictions – Air freight is much stricter in what it is allowed to transport than sea freight. Hazardous materials such as explosives, gases, flammable or radioactive items, toxic chemicals, and strong magnets are among some of the items that are prohibited from being delivered by air freight.
- Environmental Restrictions – Air freight is considered worse for the environment compared to shipping goods by sea.

Importance of air cargo.

The air cargo industry acts as an engine of growth for the air transport sector and economic growth. Aircraft carrier 3% of international trade by volume but 35% by value.

The growth of the air cargo industry is directly related to GDP.

Vital to the development of the global economy and the ongoing success of globalization.

Benefits of Air Cargo

In recent decades, the flight business has become the best means of shipping payloads in a safe and timely manner. Air load revolutionized the transportation business, immeasurably reducing dispatching times for freight across the world compared to famous alternatives like trucks and boats. As goods could be shipped more rapidly, companies all throughout the planet suddenly approached supplies that were once, for time or price requirements, impossible for them to access.

This allowed them to reduce prices and make their goods more accessible to the general populace. Companies could help benefits by exploiting these competitive prices, permitting cheaper consumer goods as well as offering more opportunities to enter other lucrative industries.

Another benefit of airship cargo is security. Air transportation is the safest mode of transport on the planet, with accidents resulting in the deficiency of payload happening undeniably less than with transportation through street or sea.

Airlines have secure taking care of measures in place to ensure staff or outsiders don't interfere with payload. Related to technological advances in load taking care of, for example, freight following, air payload provides a safe and secure mode of transport for goods and products.

Air transport provides vital economic benefits

• Aviation provides the only worldwide transportation network, which makes it essential for global business and tourism. It plays a vital role in facilitating economic growth, particularly in developing countries.

• Aviation transports close to 2 billion passengers annually and 40% of interregional exports of goods by value.

• 40% of international tourists now travel by air.

• The air transport industry generates a total of 29 million jobs globally.

• Aviation's global economic impact is estimated at US$ 2,960 billion, equivalent to 8% of world Gross Domestic Product (GDP).

• The world's 900 airlines have a total fleet of nearly 22,000 aircraft. They serve some 1,670 airports through a route network of several million kilometers managed by around 160 air navigation service providers.

• 25% of all companies' sales are dependent on air transport. 70% of businesses report that serving a bigger market is a key benefit of using air services.

Air transport provides significant social benefits

• Air transport improves the quality of life by broadening people's leisure and cultural experiences. It provides a wide choice of holiday destinations around the world and an affordable means to visit distant friends and relatives.

• Air transport helps to improve living standards and alleviate poverty, for instance, through tourism.

• Air transport may provide the only transportation means in remote areas, thus promoting social inclusion.

• Air transport contributes to sustainable development. By facilitating tourism and trade, generates economic growth, provides jobs, increases revenues from taxes, and fosters the conservation of protected areas.

• The air transport network facilitates the delivery of emergency and humanitarian aid relief anywhere on earth and ensures the swift delivery of medical supplies and organs for transplantation.

AIRCRAFT TYPES:

Cargo can be transported by passenger, cargo, or combo aircraft;

Passenger aircraft carries freight in the cargo area under the passengers, the so-called 'belly'. Cargo can also be transported in the passenger cabin as hand-carry by an "onboard Courier".

Cargo aircraft carries freight on the main deck or in the belly utilizing nose-loading or side loading.

Combo aircraft carries cargo on the main deck behind the passenger's area with side loading and in the belly.

THE AIRWAY BILL:

The airway bill which is used for air cargo all over the world facilitates the rapid expansion by shipment by air. The airway bill provides vital information about the cargo, the shipper, and the customer to whom the shipment is going.

Airway bill provides the following information;

1) Name and address of the consignee.
2) Place of origin and destination of the shipment
3) A number of packages and the nature of cargo contained therein.
4) Weight, quantity, and volume of dimensions of the goods.
5) Freight charges.

Generally, the airway bill is prepared in three original and a number of copies for the following purposes,

1) It is considered to be a receipt for the goods from the airline.
2) Technically, it is a kind of a contract between the shipper and the airline for moving the goods.
3) It is also called an instruction sheet as it provides the required instruction needed for moving the goods and handling them at all stages of their journey from the origin to destination.
4) It also contains the customer's declaration and a bill for the freight.
5) When it contains the amount and extent of insurance, it becomes a certificate of insurance

The airway bill will be normally prepared by the shipper himself or by the air-cargo agent or by the airline. It is a valid contract when both the shipper and the airline representatives have signed it.

CUSTOMS CLEARANCE PROCESS:

The importer/exporter themselves can clear the goods by filling in necessary documents after taking permission from the assistant commissioner/deputy commissioner in charge of the import section.
The agent, if appointed, should be a holder of a valid license issued by the commissioner of customs. Such agents are known as Customs House Agents.

Customs clearance procedure for Export and Import:
The Customs Act and the tariff were amended on March 12, 1992, to assist the market economy to facilitate external trade. In accordance with the law, a notification was issued to regulate the classification of imported goods and assessment of duties.

Custom Declaration form for Import/Export Clearance:

Import:
Under the existing rules and regulations, all incoming consignments of goods must be cleared through the customs departments under an import declaration form. The import form is to be accompanied by the following documents;

* Import License or permit
* Invoice
* Bill of lading of air consignment note
* Packing list
* Other certificates and permits issued by the relevant government departments as a condition for import.

Export:

On the shipment of export commodities and Export Declaration Form must be submitted to the customs department together with the following documents:

* Export License Permit
* Invoice
* Packing list
* Sales Contract
* Shipping Instruction
* Letter of credit
* Payment advice referring inward telegraphic transfer number/ Inward telegraphic transfer government number
* Sample of goods
* Health certificate for the export of live animals.
* Other certificates and permits as required by the government agencies concerned.

DOCUMENTS USED FOR IMPORT AND EXPORT BY AIR:

Bill of Lading/Airway Bill:

A Bill of Lading is a document that is used to recognize the receipt of shipment of goods. A transportation company or carrier typically issues this document to a shipper. In addition to acknowledging the receipt of goods, the document indicates the particular flight on which the goods have to be placed, their intended destination, and terms for transporting the shipment to its final destination. It also includes a description of the goods that are being shipped their weight and the other shipping details.

Original Bill of Lading:

Generally, when an original bill of lading is issued to the shipper, they take three originals. One for the bank, one to be sent to the consignee, and one to be kept

with the shipper. One of the originals is submitted to the shipper at the destination for the release of cargo, the other two originals are void and rendered worthless.

A bill of lading serves three main purposes;

1) As a document of the title of the goods
2) As a receipt from the shipping company
3) As a contract for the transportation of goods

Invoice:

An invoice or bill is a commercial document issued by a seller to the buyer, indicating the products, quantities, and agreed price for products or services the seller has provided the buyer. An invoice indicates the amount the buyer must pay to the seller, according to the payment terms. The buyer is sometimes offered a discount if paid before the due date.

Shipping bill:

It requests seeking the permission of customs to export goods. It contains a description of the export of goods by sea/air. It contains the number and kind of packages, shipping marks, and number, the value of goods, the name of the flight, the country of destination, etc. on the other hand, importers have to submit copies of documents call the Bill of Entry for customs clearance. Later, a copy has to be given to the bank for verification.

Packing list:

The packing list is an extension of the commercial invoice. The exporter or agent (the customs broker or the freight forwarder) reserves the shipping space based on the gross weight or the measurement shown in the packing list. Customs uses the packing list as a checklist to verify the outgoing cargo in case of exporting and the incoming cargo in case of importing.

Certificates of origin:

A certificate of origin is a document used in international trade. It is a printed form, completed by the exporter or its agent and certified by an issuing body, attesting that the goods in a particular export shipment have been wholly produced, manufactured, or processed in a particular country. The 'origin' does not refer to the country where goods were shipped from but to the country where made. In the event, the products were manufactured in two or more countries, the origin is obtained in the country where the last substantial economically justified working or processing is carried out.

Air cargo logistics process

The Air cargo logistics process is a time-definite endeavor that requires the coordination of multiple parties namely shippers, freight forwarders, carriers, customs, warehousing agents, ground handlers, and consignees. The processes of moving cargo from its origin to destination are given below:

In specific Transshipment of cargo from a gateway airport to an inland airport

Steps involved:

- ☞ Import the cargo
- ☞ File application and avail for transshipment permit
- ☞ Transport to transshipment warehouse of the domestic carrier under the Customs preventive escort.
- ☞ Acknowledgment of goods by the customs officer
- ☞ Execution of bond with the domestic carrier
- ☞ Preparation of EGMs by domestic carrier on receipt of goods
- ☞ Copies of EGMs sent to customs at the destination airport
- ☞ Checking at the destination airport with reference to Export General Manifest
- ☞ Final clearance

Process of international air cargo transportation flow:

International air cargo is not only a system of transporting cargo using an air carrier, but it also needs to handle the issue before and after shipping, and a lot of works are to be done.

The basic exports process takes the following steps and structure;

1. The shipper send a request to be forwarded and the forwarder arranges transportations for the shipper

2. The freight forwarder books cargo space in the carrier

3. When the exportation is permitted, the customs brokers do customs clearance. In the case of clearing and forwarding agents, both cargo spaces booking and customs clearance has done by this agent.

4. The shipper moves cargo to the airport waiting for loading.

In the case of the import cargo, the process is;

1. When an airline moves cargo to the destination country and unloads the cargo

2. Customer's broker does customs deceleration and moves cargo to consignee when the import is permitted.

Associations with the air cargo industry

IATA:

The International Air Transport Association (IATA) is the trade association for the world's airlines, representing some 290 airlines or 82% of total air traffic. They support many areas of aviation activity and help formulate industry policy on critical aviation issues. Vision is Working together to shape the future growth of a safe, secure, and sustainable air transport industry that connects and enriches our world. IATA's mission is to represent, lead, and serve the airline industry. Which is

Representing the airline industry

They improve understanding of the air transport industry among decision-makers and increase awareness of the benefits that aviation brings to national and global economies. Advocating for the interests of airlines across the globe, they challenge unreasonable rules and charges, hold regulators and governments to account, and strive for sensible regulation.

Leading the airline industry

For over 70 years, IATA has developed global commercial standards upon which the air transport industry is built. IATA aims to assist airlines by simplifying processes and increasing passenger convenience while reducing costs and improving efficiency.

Serving the airline industry

IATA helps airlines to operate safely, securely, efficiently, and economically under clearly defined rules. Professional support is provided to all industry stakeholders with a wide range of products and expert services.

DGCA

The Directorate General of Civil Aviation (DGCA) is the statutory body formed under the Aircraft Bill, 2020. This directorate investigates aviation accidents and incidents, maintains all regulations related to aviation, and is responsible for the issuance of licenses of aviation in India. It is headquartered along Sri Aurobindo Marg, opposite Safdarjung Airport, in New Delhi. Vision is to Endeavor to

promote safe and efficient Air Transportation through regulation and proactive safety oversight system.

ICAO

The International Civil Aviation Organization (ICAO) is a specialized and funding agency of the United Nations. It changes the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth. The ICAO Council adopts standards and recommended practices concerning air navigation, its infrastructure, flight inspection, prevention of unlawful interference, and facilitation of border-crossing procedures for international civil aviation.

CHAPTER 4
DATA ANALYSIS

Airfreight has a significant part to play in a healthy supply chain ecosystem. In spite of the fact that air freight is one of the more expensive approaches to deliver goods, it enjoys one huge benefit which is "speed". The need to move goods rapidly is driven by customer expectations and the urgency of shipments that need to arrive straightaway. Air payload carriers can greatly benefit from digitizing their supply chain and acquiring greater permeability for both themselves and their customers. This likewise helps to incorporate dexterity into the supply chain blend, giving more alternatives to supply chain managers.

The Challenges Facing by Air Cargo Carriers

Let’s explore the unique difficulties that air freight logistics providers face:

Weakening demand:

Airfreight struggled towards the end of the 2010s, with 2019 alone seeing a four percent fall in freight transport kilometers. It's hard to predict future demand, yet streamlining is necessary to retain benefits.

Geopolitical and economic tensions:

Major political events like the US-China trade war, Britain's exit from the European Union, and fears of a pandemic can hurt assembling and production, with a downstream effect on air load carriers. Understanding and modeling these dangers is essential for sending arranging.

Airport slots for carriers:

European air terminals are experiencing a severe shortage of spaces at air terminals to accommodate freight planes. Congestion is already normal at the more mainstream destinations, with the problems expected to get worse. This requires very accurate supply and demand management.

Efficiency:

Airfreight carriers operate on meager net revenues, pressured even more by falling demand and the rise of Amazon Air. This demands greater permeability and efficiency to remain competitive.

Airfreight is a key enabler of cross-border trade which becomes especially basic for express deliveries, significant distance, and efficient transportation of sensitive and basic goods. It has suffered from decades of no development except for is present in the groove again with some positive forces supporting its development: solid export orders, blasting e-commerce relying on express delivery, and an expected high-value specialized freight.

Digitization is seen as a key lever for the development of new innovative services and arrangements which will drive efficiency noticeable all around the payload ecosystem and deliver incremental value to the end customers.

However, while street freight R&D deals with self-governing vehicle development and rail freight has already triggered Internet of Things initiatives to develop use cases around predictive maintenance, geolocation, airship cargo appears to embrace more leisurely digitization. While some significant initiatives have been launched, for example, e-freight and computerized payload, digitization remains negligible.

This knowledge is based on a scene of initiatives launched in air freight by significant airline companies and customary air transportation establishments including IATA. It will therefore primarily feature initiatives from the transportation side of the value chain.

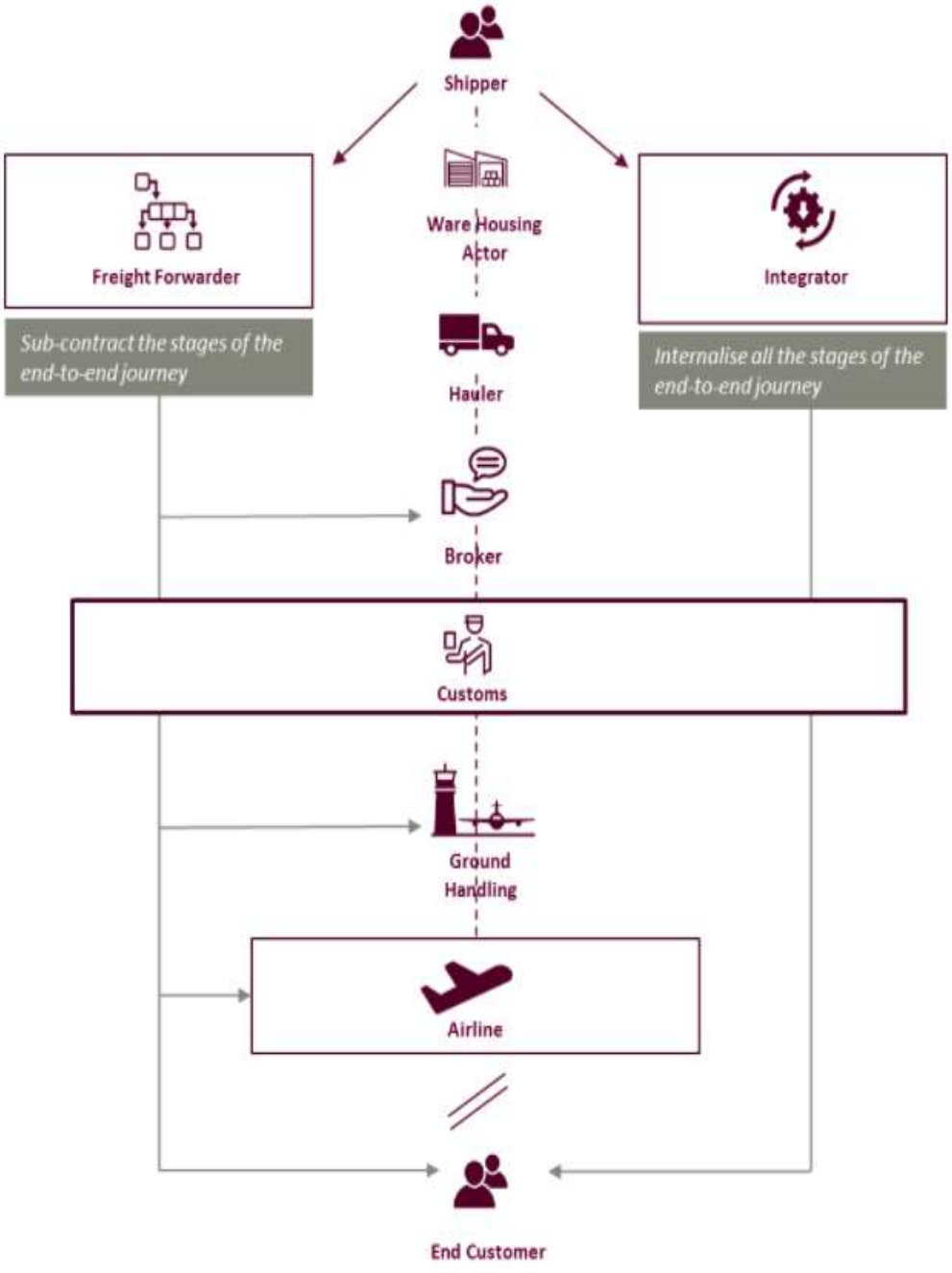
Overview of the current ecosystem

The air load ecosystem is complex with numerous stakeholders involved along the value chain: shippers, carriers, customs, freight forwarders, integrators, airlines, and end customers to just name a few.

Two models are currently controlling the air load industry: the freight sending model and the integrated freight model. The shipper will whether commission a freight forwarder that will sub-contract every one of the stages of the end-to-end journey or an integrator that will internalize this load of stages by claiming the assets to do as such.

The integrator will then arrange the storage and the collection of the load, the surface vehicle to the air terminal, the changeover by custom borders, the air leg, and the delivery to the last destination.

For the freight sending model, each stage of the journey will be under the responsibility of the sub-contracted entertainer. For the shipment transportation to the air terminal and afterward to the foreign destination, a hauler (in charge of the ground transportation), a ground-dealing with an agent, and an airline are involved. An insurance or customs broker can likewise participate to provide expertise on specific subjects.



Adoption of digital technologies to alleviate current pain points

The air load industry has been delayed to embrace digitization: whereas passenger airlines offer a diversity of booking channels, enable transparent

product correlation and shopping experience, and have all adopted electronic tickets, air freighters still predominantly rely on customary channels, for example, call centers to promote rates which are not easily comparable with the competition and widely use numerous paper documents for their shipments. Nevertheless, advanced is creating a new value recommendation in every industry, and customers' rising expectations for a personalized, on-demand, and mobile service are not satisfied. Specifically, the limited offer evaluating transparency, the absence of permeability over the limitation, and the situation with goods transported are not up to speed with current customer expectations.

Furthermore, the business actually relies on paper-based processes to exchange shipment information along the complex supply chain. This absence of data integration and normalization is prone to helpless data quality and error mistakes, restricts the end-to-end perceivability and expectation along the shipment journey, subsequently exposing to any unexpected event and carrying inefficiencies to the supply chain.

Another challenge the business faces is the trouble to optimize freight limit use. This stems from primary overcapacity, mutually with dissymmetrical payload flows and limited shipments predictability.

Digital as an opportunity to improve communication

Towards digitized customer interactions and offer transparency

Significant payload airlines have addressed the customers' needs for increasing freight offer transparency through the dispatch of online booking entries. This is the advent of a new direct reserving channel: not just quotes become quickly available and updated in real-time, however, the booking and payment processes are altogether facilitated, and house to house service can even be offered, including the treatment of customs formalities. Airfreight services customers can send any sort of personal item in a convenient, fast, and practical manner

through the likelihood to search for the lowest available rate on a given period and to specify the type of goods and specific treatment needed.

Other stages like Fleet or Cargo base work on the freight forwarders' selection process as shippers can submit online their shipment details and receive offers from freight forwarders which become more easily comparable than through the conventional process requiring separate calls to different freight forwarders. Even if at their early stage with limited geographical rich and incomplete vehicle value chain coverage, these internet gateways are seen as disruptors for conventional "blocks and mortar" freight forwarders. However, these stages are still a long way from questioning the customary role of freight forwarders. Booking help and rate citing are certainly a significant added value for the supply chains; however, customs clearance and documentation, temporary warehousing, last-mile delivery, and considerably more services emphasize the column role of freight forwarders inside the value chain.

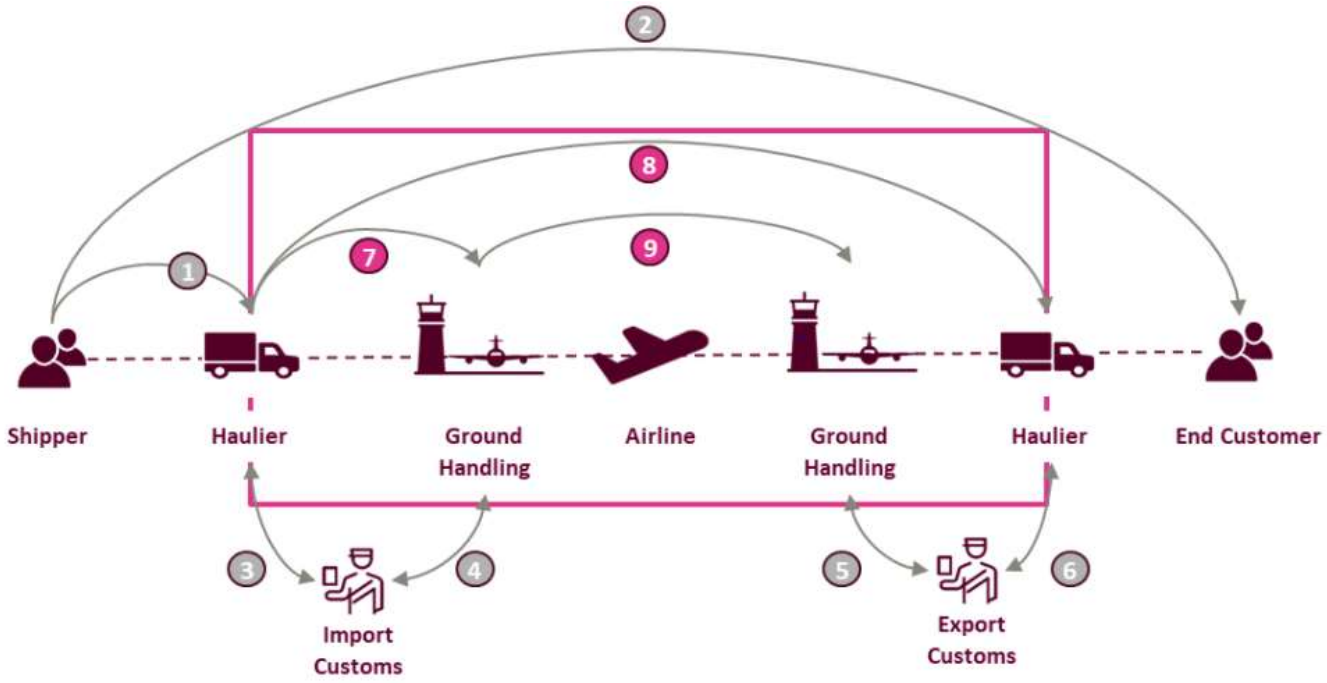
Improvement of current communication and integration along the value chain

With numerous paper documents along the value chain sometimes leading to inaccuracies, losses, and misunderstandings at transcription, the International Air Transport Association (IATA) initiated two major projects to streamline the communication process along the air cargo journey: e-Air Waybill (e-AWB) and e-Freight.

An air waybill is the contract of carriage between the shipper (direct or freight forwarder) and the airline, with one copy that will always be attached to the consignment. E-AWB project aims at electronically standardizing air waybills. The expected benefits are many and encompass an increased accuracy, quality, and reliability of data exchanges across airlines and shippers/forwarders, and reduced processing costs. This project is also expected to reduce cargo handling delays, ease security compliance and improve customer service. IATA is closely monitoring the e-AWB monthly performance of airports, airline companies, and

freight forwarders through e-AWB penetration with a target of 68% for December 2018.

The E-freight project has a broader aim as it consists of the development and implementation of end-to-end paperless transportation processes for air cargo, involving all the stakeholders across the value chain. This project is made possible through a regulatory framework, modern electronic messages, and high-quality data. E-freight was initially kicked off in 2006 but a roadmap for paperless air cargo was created in 2013 to accelerate the industry's adoption. More specifically, e-freight aims at removing customs, transport, commercial, and special cargo documents.



Digitizing the Air Cargo Supply Chain helps with

More than three-quarters of logistics businesses can benefit from growth opportunities in the supply chain, with 60% of supply chain businesses saying digitization is having a significant impact. The average business involved with supply chains has only digitized just over 40% of its operations. There's a gap that air cargo carriers can benefit from. Here's how:

Air Cargo Carriers Benefit from Data Sharing and Visibility

A modern air cargo logistics supplier needs to manage data across multiple areas. From customers and agreements to airplanes and assets, air load carriers can access and share information to keep everyone on top of it. A centralized stage can unite air freight data across multiple sources and conventions, giving one view of reality for bits of knowledge and reporting. This makes it a lot easier to resolve issues, identify demands and remain flexible.

Analysis of Data Identifies Efficiency and Cost Savings for Air Cargo

Operating an airship cargo business is expensive. High fixed costs for assets and airplanes combine with variable expenses like fuel to create a massive expense base. This means amplifying efficiency is key. Gathering data from multiple sources considers deep investigation that can identify opportunities for cost reduction, problem-addressing, dexterity, and service improvement. For

example, airship cargo carriers would understand the entirety of the costs involved with a specific shipment, taking into consideration more accurate citing and realistically priced services.

Real-Time Location Tracking and Monitoring Identifies Where Cargo is Located

Dexterity is especially basic. Real-time permeability of airship cargo assets combined with logistics updates and other essential information lets carriers maximize service accessibility to customers. Following the area of shipments to and from the air terminal and keeping in mind that they're noticeable all around helps to keep freight secure and ensure it's delivered and handed over correctly. From GPS situating to airplane following, real-time permeability makes it easier to manage end-to-end shipments, wherever they are.

Access to a Global Network of Logistics Service Providers Provides Flexibility

The modern supply chain means that airship cargo carriers are deeply interconnected with other logistics service providers. A centralized advanced stage provides easy access to LSPs, together with information on limits, limitations, and services. This makes it a lot easier to manage supply chain handoffs, increasing efficiency and speed and driving up customer fulfillment. It's a key piece of keeping up with supply chain nimbleness.

Accurate Forecasting Allows for Better Management of Air Freight Capacity

The high fixed costs of dealing with a fleet of airplanes mean that carriers need to ensure planes are full to maximize revenue. An advanced supply chain stage can use sophisticated AI and machine learning to predict when flights are under or over-utilized. Combined with the flexibility offered by connections with other LSPs, this makes it a lot easier to manage demand and keep up with benefits while keeping up with customer service. For example, knowledge of an air terminal's space accessibility means better authority over appearances, departures, and other air terminal-based logistics operations.

Digitization Helps Avoid Manual Rework and Reduces Errors

Advanced computerization reduces mistakes and delays noticeable all around the payload supply chain. An advanced stage can automate normal processes like logistics handoffs and real-time following, meaning that employees don't need to waste time and introduce errors by duplicating information starting with one place then onto the next. Areas like automated invoicing and charging mean that airship cargo carriers get paid faster, as well.

Initiations from IATA in digital

The initiatives defined and driven by IATA intend to address these challenges, by leading the business with end-to-end supply chain cooperation on the development of innovative technologies, streamlined processes, and worldwide norms. The vision is to achieve a completely carefully connected and integrated air freight supply chain.

Projects and initiatives

IATA works with the Cargo Operations & Technology Board (COTB) and its Working Groups / Task Forces to modernize air cargo standards, drive change and explore new technologies to assess their potential impacts and use within the air cargo supply chain:

ONE Record: ONE Record is a standard for data sharing and creates a single record view of the shipment. This standard defines a common data model for the data that is shared via standardized and secured web API.

Interactive Cargo: the Interactive Cargo project aims to equip the air cargo supply chain with responsive air cargo services based on intelligent systems able to self-monitor, send real-time alerts, respond to deviations to meet customers' expectations, and report on the cargo journey to allow data-driven improvements.

Cargo Connect: Cargo Connect aims at simplifying, standardizing, and modernizing connectivity with and between the Cargo Community Systems (CCSs). It will promote digital collaboration and enable efficiency by creating a stronger alliance between airlines, freight forwarders, and distribution partners.

e-freight / e-AWB: e-freight is an industry-wide initiative involving carriers, freight forwarders, ground handlers, shippers, customs brokers, and customs authorities. e-freight aims to build an end-to-end paperless transportation process for air cargo through a regulatory framework, electronic messages, and high data quality. This initiative also includes the e-AWB project, the electronic version of the paper Air Waybill (AWB).

FEDeRATED: This project is co-funded by the European Commission / Connecting Europe Facility (CEF) and aims to deliver the foundations for a trustworthy and interoperable business and administrative data-sharing infrastructure for freight transport and logistics. 15 partners (including IATA) located in 6 EU Member States (Luxemburg, Italy, Finland, Sweden, Netherlands, Spain) are contributing to this project.

CHAPTER 5

CONCLUSION

The effect that technology has had on industries everywhere in the world can't be understated. Its influence is prevalent and has transformed the manner by which companies operate, as man-made reasoning (AI), mechanization, and Big Data begin to take hold. The airship cargo industry is certainly no exception.

Customer-centricity is widely considered key to long-haul success worldwide, especially in the logistics space. Customers need to feel like they're in charge and, by furnishing customers with the capacity to follow their orders from the warehouse to their front entryway in real-time, it permits nonstop permeability and an element of control which ultimately means a more satisfying delivery experience and return business.

Despite the lethargic year, there are positive signs that confidence and orders in airship cargo will bounce back in 2020 and beyond. However, Alexandre de Juniac, IATA's Director General and CEO are under no deceptions about the challenge ahead for the airship cargo industry.

Faced with the need to reinvent itself, air freight has step by step adopted computerized opportunities with different levels of development. While there is a progressive selection of IATA e-AWB standard, business intelligence devices for revenue and limit usage enhancement, booking entries for direct connection with the end customer, IoT, and Big data remain of minor use and struggle to develop.

The potential behind these advanced opportunities can be translated into new services with high added value for the customer, operational excellence, incremental revenues, and improved connections with business partners. Therefore, the computerized guide will profoundly differ depending on the stakeholder situating in the value chain and their strategy.

With everything taken into account, regardless of their specific desires, all air payload stakeholders ought to follow a shared objective: reaffirm the competitiveness of air transport compared to alternative modes of freight transportation, which are all more advanced in their computerized change.

FINDINGS

https://supplychaindigital.com/
https://www.iata.org/
https://www.blumeglobal.com/
https://www.sia-partners.com/en
https://www.civilaviation.gov.in/

DIRECTION FOR THE FURTURE RESEARCHER

Some of the research very helpful while comparing the efficiency of the cargo movement in an airport. Introduction of new technologies and digitalization in the process of cargo movement, data transparency had become easy to access and also to permit movement. Some airports explain how they achieve their efficiency by implementing minute changes in the process. Considering those changes Further studies are required to establish a detailed analysis between before and after when the implementation of the new ideas and process to the air freight logistics. Analysis of numerical data with statistics changes will be able to give a clear picture of the air cargo industry.