

Lecture Note

Course Title: ITM 3303 Logistics for Tourism Management

Credits: 3(3-0-6)

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Program: Tourism Management

Unit 3: Transports in the History

Topic

- Definition and objectives of transport
- Evolution and waves of transport development
- Transports from the 19th century onwards

Objectives

After the completion of this unit, students should be able to:

- Describe the definition of transport/ transportation.
- Recall briefly the evolution and waves of transport development.
- State the transportation periods categorized according to the energy technology innovation.
- Describe the cumulative waves of transport development.

Introduction

Transportation has played its significant role in human daily life since ancient days. Physical and mental needs of human such as the 4 factors for living foundation have forced human to find solutions. As human is a social living who need to travel and contact with other people within their own community and outside their community in order to exchange information, knowledge and trades. Therefore, human started to develop transport or vehicle modes that could help them move themselves and move things faster, and they have tried to improve the technology to be better until they could travel very faster in a longer distance. Trades between areas were improved. There have been exchanges of things like natural resources (raw materials), goods and services. Later, development of routes and other vehicles to transport goods are increasingly advanced. Many places become more easily accessible. Growth and progression of transportation has driven the world society to be more urbanized or bigger society. This means that people are more mobilized; they can move to different places to work, to travel or even to live. This has driven many towns to be bigger until they become cities. Higher population means higher level of needs, a diversity of needs of people, where, within a single town/ city/ country, resources are not enough to feed them. Transportation therefore plays essential role in transporting resources, materials and goods from other places to another.

1. Definition and Objectives of Transport

1.1 Definition

Transport is composed of one prefix and one word:

- ‘*Trans*’ means across, beyond, crossing, on the other side, changing thoroughly
- ‘*Port*’ means to hold, to carry, or a place on a waterway with facilities for loading and unloading ships, a city or town on a waterway with such facilities, the waterfront district of a city, a port of entry.

Transportation means an act of moving things or animals from one point to another; moving of individuals from one point to another.

Besides, Business Dictionary gives a definition of *transportation* as below:

- Any device used to move an item from one location to another. Common forms of transportation include planes, trains, automobiles, and other two-wheel devices such as bikes or motorcycles.
- The process of shipping or moving an item from point A to point
(Source: <http://www.businessdictionary.com/definition/transportation.html>)

Wikipedia provides a definition of *transport* or *transportation* as a movement of people, animals and goods from one location to another.
(Source: <http://en.wikipedia.org/wiki/Transport>)

Moreover, transportation is considered to be a movement done by demands and needs of human, and to provide benefits or utilities to those who involve, and to make them meet the objectives of transportation.

1.2 Objectives of Transport

Human created transportation with the main aim of the development of the three dimensions: society, economics and politics. The development of these three dimensions will enable a country to have positive changes in the following:

Social changes

- (1) Transportation expands new communities. Due to the inner areas having high density of population, transport development enable human to move from these dense areas to other places in the outer part to settle. By this way, communities and towns are expanded and spreads of economic occur from the inner areas to the outer areas.
- (2) Human is a social species, meaning that they need to meet, communicate and interact with others in order to share knowledge and experiences. The development of transport enables human to meet and interact with people at a further distance from their hometown. This is to promote relationship between communities.
- (3) Transport helps spread the growth and development from the core zones to other more remote areas (periphery zones). This promotes equality of development and reduces development gap. For example, there are movements of technology and other ICT to regional areas.
- (4) Transport improves quality and standard of community living because there is higher mobility among people of community and people outside community to travel or commute to each other. This is the mobility diffuse factor that supports dwellers to live better with positive changes and acculturation.
- (5) Transport promotes education nationwide. This happens by people traveling outbound to receive education service or by transporting educational materials and equipments to people living in remote areas.
- (6) Transport facilitates people to have relaxing time, and therefore to have good mood and to develop positive state of mind. This is because transport allows people to make a move or to travel to other places outside their routine and daily life and far from their home environment. This is the main benefit of transport for tourism industry.

Economic changes

- (1) Transport allows trades of goods and services, including goods of 4 factors needed for human daily living, because transportation is used in distributing goods and services from production sources (producers) to consumption sources (consumers) or residential areas. Also, people use transport in commuting to other areas to find goods and services that are not available in their areas.
- (2) People use transportation in traveling to work places, in order to work for earning money for living.
- (3) Transportation creates utilities and adds values of goods and services. Without transportation, human could not move goods and services to places of demands (places there are people who need particular goods and services), and therefore, goods and services would not be any of value.
- (4) Transportation creates price stability, because human can distribute goods to different places or markets in similar times. By this way, prices of goods, even at different places, are similar or the same.
- (5) Transportation spreads income and reduces unemployment. People who cannot find a job in their areas can travel to other places, where there is a diversity of businesses and demands of labor, to find and get a job, both within a country and abroad.
- (6) Transportation motivates huge productions or manufactures, which thus reduces the cost of production. Without transportation, each producer or manufacturer would produce goods only to cater people within their areas, as they could not distribute goods to other areas.

Political and governing or administrative changes

- (1) Transportation facilitates improvement of a country's administration. Each government or state can govern its country under the good condition of transportation network that connects different parts of the country. Government can be decentralized by distributing governmental officers to administrate or governing in each remote area. For example, Egypt could be existing a hundred years because of having The Nile River as its main transport mode.
- (2) Transportation promotes international relationship because leaders and population of each country can travel to the other countries to make relationship. Without good or well- developed transportation technology, it would be difficult to travel to make international relationship.
- (3) Transportation is very useful when there are any (urgent) crises, disasters or political unrests. It facilitates governmental staff to move fast to charge, to control, or to solve problems with effective and timely manner.

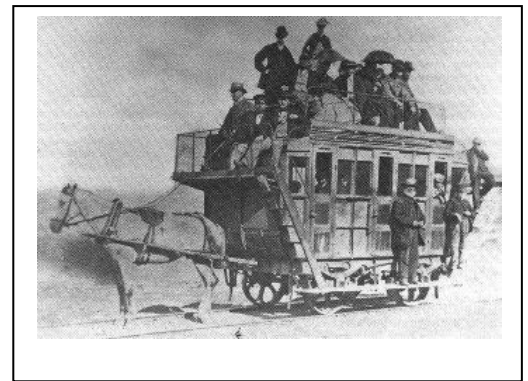
2. Evolution and waves of transport development

From the old time to the present day, transportation can be divided into 6 periods, based on the energy technology innovation created by human to propel or move vehicle:

2.1 The period of natural energy

This was the first period of transportation in which human had learned to use natural energy in move vehicles. Vehicles during this period were simple. Natural energy in this period can be divided into 2 main types:

- *Energy from nature* such as wind or airstream, water current/ flow. An example is ship driven by wind flow or water current
- *Energy from human or animals* (human or animal labor), which was used in the very early period of transport; human moved or moved things by use of human energy (muscle). Later they learned to use animals by putting things on the back of some kinds of animals such as horse, cow and elephant. After, they learned to use animals in drawing, dragging or pulling, by placing things on a plate tied with the animals, and later by creating a carriage with wheels (first wooden wheels, and later gas wheels), and animals drag the carriage.



2.2 The period of steam engines

In the early time, human used wood and coals in boiling. Later they changed to use oil. Thomas Newcomen, a British man, was the first person who invented steam engine. Steam engines have been used in water or maritime transport which has ships as the vehicle, and land transport which has rail as the vehicle.

2.3 The period of electric motor

In this period, human was successful in inventing electric motor. Electric motors convert energy into mechanical motion that is used in driving vehicles. Electric motor can be used with small- sized vehicle, tram, and some types of trains. Some are called by the energy used such as electric train which is a train powered by electricity (for example: electric locomotive). Electric energy is considered an environmentally- friendly energy.

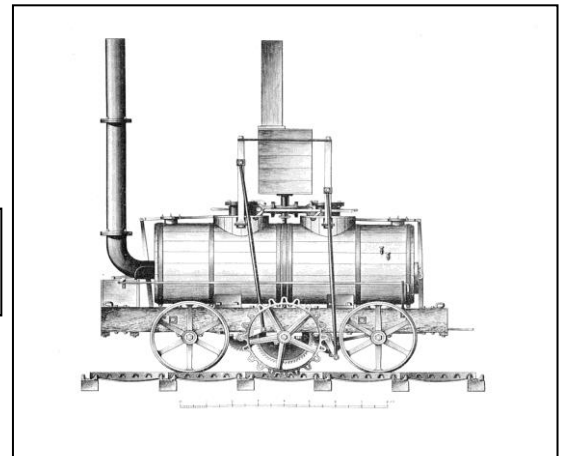


An Amtrak, electric locomotive pushing train, New Jersey



Locomotive train, India

Blenkinsop's rack locomotive, 1812
(British Railway Locomotives 1803-1853)



2.4 The period of internal combustion engine

In this period, human invented internal combustion engine. The main energy used with this type of engine is fuel or gas, combusted to produce energy. There are 2 types of fuels used dependent on types of vehicles. Small- sized vehicles that do not need much energy in propelling, use Benzil, such as private car. For vehicles that nee higher amount of energy like truck or 10-wheel trailer truck, pick- up, or train, use Diesel. Combustion of the vehicles of this type leaves chemical substance; therefore, internal combustion engines cause air pollution, while some types of internal combustion engines cause noise pollution.

2.5 The period of jet engine

Jet engine is a product of higher technological advancement developed further from internal combustion engine. Jet engine has a very high propulsion (jet propulsion), making a vehicle that uses this type engine move very fast. At present, the only vehicle type that's jet engine is air transport mode, such as airplane.

2.6 The period of nuclear power

Nuclear power was developed from the knowledge of chemistry and physics sciences. It is categorized as a very high technology that costs very high investment and can have severe danger if there is no strong control of production and use. Because of this, nuclear power is normally restricted in laboratory uses for research benefit. There still is no use of nuclear power in transport services.

3. Transports from the 19th Century onwards

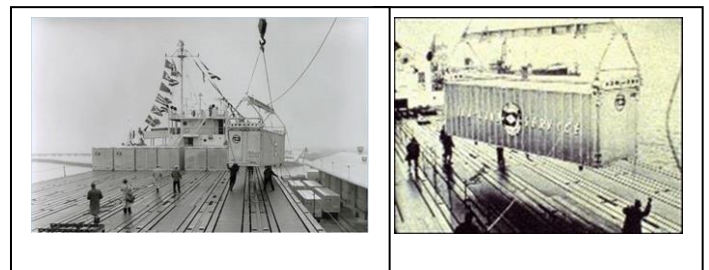
3.1 Transportation in the Fordist era (1920- 1970)

The Fordist era (*Fordism*, named after Henry Ford, is a notion of a modern economic and social system based on an industrialized and standardized form of mass production) was characterized by the adoption of the assembly line as the dominant form of industrial production, an innovation that benefited transportation substantially. The internal combustion engine, or four-stroke engine by Daimler (1889), which was a modified version of the Diesel engine (1885), together with the pneumatic tire (1885) by Dunlop made road vehicles operations faster and more comfortable. Compared with steam engines, internal combustion engines have a much higher efficiency and use a lighter fuel: petrol. Previously, petrol was perceived as an unwanted by-product of the oil refining process, which was obtaining kerosene for illumination. In this era, petrol became a convenient fuel. Initially, diesel engines were bulky, limiting their use to industrial and maritime propulsion. The internal combustion engine permitted an extended flexibility of movements with fast, inexpensive and door-to-door transport modes such as automobiles, buses and trucks.

Mass producing these vehicles changes considerably the industrial production system, notably by 1913 when Ford began the production of the Model T car using an assembly line. From 1913 to 1927, about 15 million Ford Model T cars were built, making it the second most produced case in history, behind the Volkswagen Beetle. The automobile became more comfortable and popular among consumers. The rapid diffusion of the automobile marked an increased demand for oil products and other raw materials such as steel and rubber.

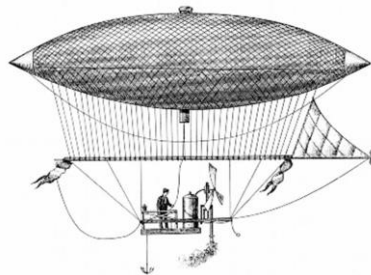
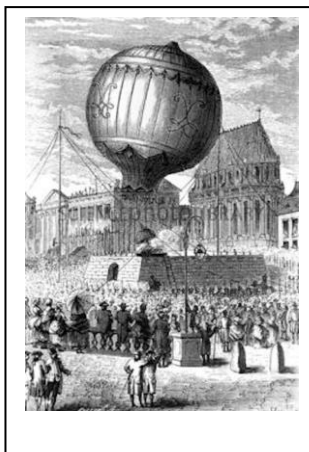
Economies of scale also improved transportation in terms of capacity, which enabled low-cost bulk commodities such as minerals and grains to be moved over long distances. However, the process was slow to start because cargo ships require large amounts of labor to be loaded and

unloaded. This informally imposed a limit of 10,000 deadweight tons to break-bulk cargo ships that remained in place until containerization began in the late



Containerization

1950s. Still, the gradual growth of international trade and the Second World War motivated a building of ship (shipbuilding). The end of the war left an ample supply of military cargo ships (named Liberty Ships) which could be cheaply used for commercial purposes and became heavily used in global trade until the 1960s. Oil tankers are a good example of the application of the principle of economies of scale to transport larger quantities of oil at a lower cost, especially in the postwar period when global demand surged. Maritime routes were thus expanded to include tanker routes, notably from the Middle East, the dominant global producer of oil. Because the distances were very long, larger tankers were produced to do oil trade in this long distance (for good economies of scale).



Hot air balloon (left) and air balloon to carry a basket containing people into the air (right).

In 1783, the first air balloon flight took place. However, because there was a lack of propulsion, no practical applications for air travel were realized until the twentieth century. The first propelled flight was made in 1903 by the Wright brothers and then an era of air transportation started. The initial air transport services were targeted at

mail since it was a type of freight that could be easily transported and due to technical limitations in carrying capacity initially proved to be more profitable than transporting passengers. The first commercial air transport service between England and France began in 1919, but air transport suffered from limitations in terms of capacity and range.

Several attempts were made at developing airship (dirigible) services, with the Atlantic crossed by a Zeppelin airship (dirigible) in 1924. During the 1920s and 1930s, there was the expansion of regional and national air transport services in Europe and the United States with mass produced propeller aircrafts such as Douglas DC-3.

Through the first half of the twentieth century the Atlantic remained an important technical challenge for non-stop distance transportation modes since it linked large markets in Europe and North America. Both sides of the North Atlantic have substantial levels of economic activity to that a mode able to safely cross



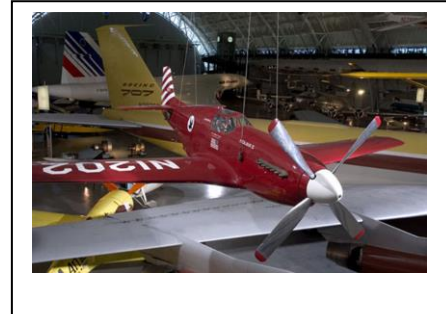
Dirigible (airship)



Zeppelin airship (dirigible) used to drop bombs in World War I

the North Atlantic non-stop would be a commercial success. The steamship was the first powered mode to set regular passenger services from the late 1830s, initially taking more than 10 days, but technical improvements reduced the transit time to about 6 days by the 1870s. By the time transatlantic liner services started to be abandoned in the 1950s, transit times were reduced to 4 days.

In the mid- 1930s, flying boat (propeller and sea plane) transatlantic services began. The sea plane initially had an advantage with its capacity to land on water but this advantage turned out to be an impediment as technical improvements were made to propeller planes, which left the sea plane with limited range. It was later abandoned as a long distance transport mode. The introduction of pressurized propeller planes in 1945 permitted the first regular transatlantic services with two technical stops (Gander, Newfoundland and Shannon, Ireland), and a flight time of about 11 hours.



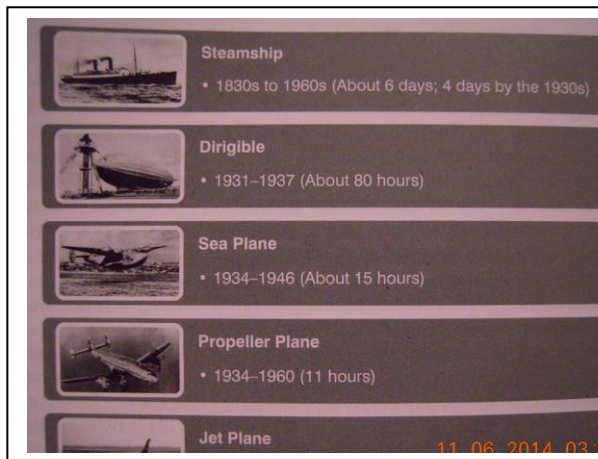
Propeller plane



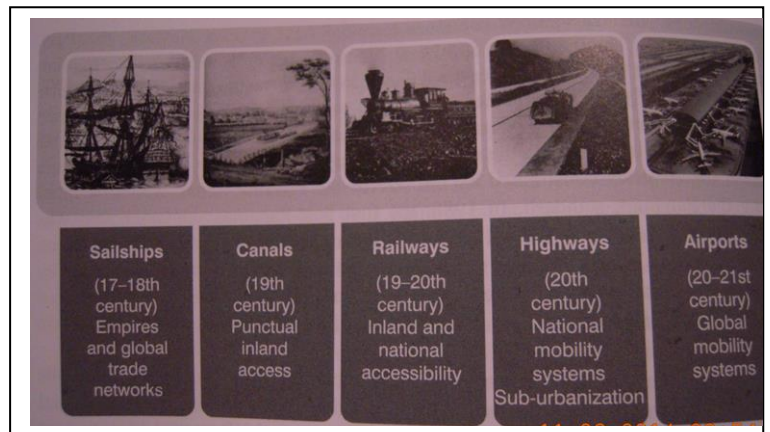
Transatlantic liners

The postwar period was the turning point for air transportation as the range, capacity and speed of aircrafts increased as well as the average income of passengers. A growing number of people were thus able to afford the speed and convenience of air transportation. The application of the gas turbine principle led to the development of jet engines, and in 1952 marks the beginning of commercial jet services with the Comet. In 1958, the first successful commercial jet plane, the Boeing 707, entered in service and revolutionized international movements of passengers, marking the end of passenger transoceanic ships (liners) and replacing propeller planes for long distance services. The jet plane enabled the setting of time dependent trade relations between producers across the world (such as electronics), and created a long distance market for perishables (fruits and vegetables) and supported the development of mass tourism.

Two figures below shows (1) powered transatlantic passenger modes and (2) cumulative waves of transport development.



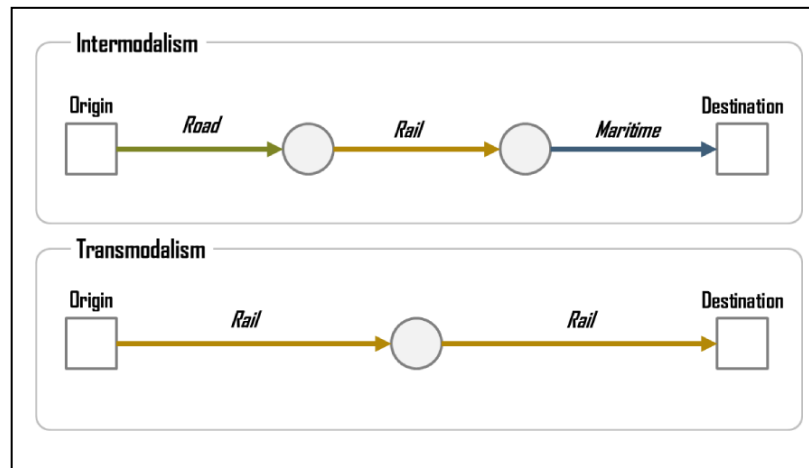
Powered transatlantic passenger modes



Cumulative waves of transport development

3.2 Cumulative waves of transport development

- (1) **First wave: Sail ships-** The mastery of high sea navigation in the mid-sixteenth and early seventeenth centuries led to the gradual setting of a global trade network supported by the emergence of colonial empires. In the late nineteenth century, the steamship would mark the demise (downfall/fall) of the sail ship, but not of commercial maritime shipping networks that continued to expand. Subsequently in the late twentieth century, the container ship would strengthen global commercial relations to an unparalleled level.
- (2) **Second wave: Canals-** The early stages of the industrial revolution in the nineteenth century were accompanied by the setting of canals complementing existing rivers or linking them. They provided the first level of inland access with the economies of scale they were able to confer; such accessibility was highly punctual, where canals could be built. Although canal systems were historically set in other parts of the world (China being the most prominent example), it is in Western Europe and North America that their impacts on economic development were the most significant. Even if canal systems were supplemented by railways for many commercial relations, they remained active transport modes, particularly in Europe, China and North America.
- (3) **Third wave: Railways-** The setting of rail systems in the second half of the nineteenth century permitted the first effective forms of inland accessibility and alongside of cohesive national transport systems, although interconnecting different rail systems took time. At the beginning of the twentieth century, rail systems were the dominant mode supporting passengers and freight flows. Although their relative importance has declined with the setting of highways, railways are still up-to-date technology (never out-of- date) because there are high speed rail systems around the world as well as their conversion to inter- modalism (inter-modal system)



(Intermodal transportation involves the use of more than one mode of transport for a journey. Intermodal passenger transport can also be called mixed-mode commuting, involves using two or more modes of transportation in a journey. The goal of mixed-mode commuting is often to combine the strengths (and to balance the weaknesses) of various transportation options. A major goal of modern intermodal passenger transport is to reduce dependence on the automobile as the major mode of ground transportation and increase use of public transport.)

- (4) **Fourth wave: Highways-** The diffusion of the internal combustion engine and the availability of cheap oil supplies permitted an effective setting of individual or small load (truckload) mobility (national mobility systems). This, however, could not take place without the construction of national highway systems, such as the Interstate in the United States. Another important impact of the highways was lower density forms of urbanization, namely suburbs (*this means that people started to move out of the inner zone (urban zone) to live in the outer zones called suburbs, due to easier traveling by roads (highways that link suburbs with inner densely dwelled zones) to travel from home (at suburbs) to work (at inner zone/ business district zones). This permitted a huge expansion of urbanization and population.*)
- (5) **Fifth wave: Airports-** The introduction of jet services in the late 1950s permitted for the first time the setting of true global mobility systems where locations can be reached within hours. Airports became important nodes in the national and global systems of passenger flows as well as freight flows. (*Freight is (1) Goods carried by a vessel or vehicle, especially by a commercial carrier; cargo/ or (2) A burden; a load/ or (3) Commercial transportation of goods.*)

Learning Activities and Medias

- Start Unit 4: introducing with some videos.
 - Blue Pullman
<https://www.youtube.com/watch?v=A1sTmFDRBgo>
 - Bankhead Highway Auto-Based Tourist Travel
<https://www.youtube.com/watch?v=bL3759kfjoI>
- Lecture and discussion
- Student presentation (10 marks): the students present the historical timeline of the selected type of transport mode. Then, the class activity is to make relationship or association between different transport/ travel modes with types of tourism and their potential as a tourism product.