



UNIVERSITA' DEGLI STUDI DI PADOVA
DIPARTIMENTO DI SCIENZE ECONOMICHE ED AZIENDALI
“MARCO. FANNO”

CORSO DI LAUREA MAGISTRALE IN
BUSINESS ADMINISTRATION

TESI DI LAUREA

New Trends in Logistics

Relatore:

Professor. Andrea Furlan

Laureando:

Hussein Eraky

Matricola n:1096594

Anno Accademico 2016 - 2017

Il candidato dichiara che il presente lavoro è originale e non è già stato sottoposto, in tutto o in parte, per il conseguimento di un titolo accademico in altre Università italiane o straniere. Il candidato dichiara altresì che tutti i materiali utilizzati durante la preparazione dell'elaborato sono stati indicati nel testo e nella sezione "Riferimenti bibliografici" e che le eventuali citazioni testuali sono individuabili attraverso l'esplicito richiamo alle pubblicazioni originali.

Firma dello studente

Contents

Introduction	3
Chapter 1: Logistics Management Overview.....	5
1.1 Origin of logistics.....	5
1.2 Definitions of logisticsmanagement.....	8
1.3 Distinction between logistics and supply chain management.....	9
1.4 Types of logistics relationships.....	13
1.5 Annual Third-Party logistisc 21 st 2017.....	20
1.6 The Cost of production issues and relation with logistics.....	22
1.7 Retail logistics.....	23
1.8 E-commerce.....	24
1.9 Global trends and challenge.....	25
Chapter 2. Amazon Case.....	27
2.1 Amazon Acquisitions.....	28
2.2 Dragon boat project	30
2.3 Ambitions of Amazon.....	33
Chapter 3. Logistics effect on freight transportation.....	34
3.1 Seafreight transportation evolutions.....	34
3.2 New Suez Canal and it effect on Egypt and on world trade.....	35
3.3 Panama Canal.....	39
3.4 Malaaca Strait.....	43
3.5 Airfreight.....	45
3.6 Emirates skycargo case.....	48
3.7 Landfreight.....	51
Chapter 4. Logistics Trends.....	52
4.1 The trend of sharing economylogistics.....	52
4.2 Omni-channel logistics.....	55
4.3 Internet of things.....	57
4.4 Robotics in logistics.....	59
4.5 Morello S.r.l.....	60
4.6 3D printing trend.....	62
4.7 Augmented reality.....	63
4.8 Industry 4.0.....	65
Conclusion.....	67
Reference.....	69

Introduction

The purpose of this study is to make the point of the situation in the logistics world considering the complex scenarios in which it operates, and based on the trends observed to hypothesize the future scenarios and the impacts they have on the economy, on individuals and on logistics processes.

Logistics in fact improve efficiency and therefore reduces costs and improve productivity in many sectors, from manufacturing to retail.

The economic growth has always been the result of revolutions or more innovation in productivity, like the steam engine revolutions, mass production model (Ford case) and 1970s the industrial automation. These innovations have boosted the economy because they have improved productivity, more productivity means greater growth in the economy.

Logistics is the focus of the new industrial revolutions and it's a real chance for any business. Proper use of this powerful tools will lead out of recession.

Delocalisation of production units has forced logistics to find alternatives to lower transport costs, but logistics is not just related to transportation, it is the ability to make the process more flexible and optimize work from the reduction in optimization of warehouses up to zero-defective products (Waste). So that today we start to perceive the return of production (greater flexibility and reduce time to market) near the customer's user.

There are cases, where companies cannot have sufficient resources to monitor the dynamics of its supply chain but have instead contracted the workload to transport intermediaries and this makes easy the control on inbound operations which not just reduces costs, but makes more co-operations with internal suppliers and logistics provider which will result in the effective business process from which all parties will win, outbound operations have become more difficult to extracting benefits.

In fashion sector where is sensitive the time to market, this phenomenon is witnessed by the fact that the flexibility required by the markets translates into flashes (redeployments every 15-20 days, and not just 2 collections per year), making products win in that specific area because the result of inventory analysis to understand the trend is the taste of consumer in that specific area at the precise time to provide to the consumer exactly what he wants and when he wants it.

Not only in fashion but also in manufacturing in general, in the retail and other sectors, we see this phenomenon because thinking about making the world around the production doesn't create wealth.

Logistics and transport also play an important role in this stage because the concept of transport will change. Drones evolve and diversify the idea of intercontinental transport. There are also enormous changes in infrastructure in order to facilitate and improve logistic performances, the new Suez Canal, the new Panama Canal and Malacca strait. They are vital in transportation of goods from east to west and vice versa for mega ships to pass through; this means a better efficiency in the unitary cost of transport for each single good.

New trends in logistics are emerging in the mutual connection between traditional logistics and technologies, like the handling completely automatized, the Software that interacts with all the process and the robots that more and more help the industries and the humans.

Chapter One

1. Logistics management an overview

Logistics used incessantly by mankind, the concept of logistics and its management are not new ideas from the building of the pyramids and how egyption used all resources natural and economic to made a wonderful monument in short time and a great civiliazation.

Logistics is a business concept as late as 1950, before which period it was conceived primarily as a military strategy and expressed in martial terminology. Now logistics is an integral part and major global economic of the business economic system and major global economic activity.

1.1 Origin of logistics

Logistics word come from Greek logos and meaning “ratio, rationality, speech, reason” and more specifically from the Greek word logistikos, and latin word ‘Logisticus’ which mean science of computing and calculating. Its original use was to describe the science of movement, and in mantainance of military equipement. Later it was used to describe the management of materials flow.

Historical development of logistics:

origin of logistics with it’s military origin and it’s adoption within the industry. The case of Great Britain is a wities of how it lose the american independce war for it’s lack of logistics operations and inadequate supply for its 12.000 troops oversea for the first six years of warwhich was devastating to soliders moral and of result of the war.¹

The french army was the first using logistics in 1905 in order to secure the arrival of supplies and ammunition in a timely and optimum manner possible. Then logistics was used heavily during World War II where was one of the factors of triumph for the allies.²

The adoption of logistics in industry:

the case of Henry Ford one of the pioneer of assembly-line just in time (JIT) manufacturing and the founder of the Ford Motor Company, didn't stop there. Instead, he diversified the company's business interests to include a number of village industries to gain better control over supply, The disadvantage with Ford’s system was not the flow He was able to turn the

¹ Dr. Martin christopher; logistics & supply chain management book. fifth edition, page.1

² Beth F. Scott. The logstics of war

inventories of the entire company every few days. Rather it was his inability to provide variety, The Model T was not just limited to one color. It was also limited to one specification so that all Model T chassis were essentially identical up through the end of production in 1926. Indeed, it appears that practically every machine in the Ford Motor Company worked on a single part number and there were essentially no changeovers for it.³

Once the world war ended it start emergence of studies aimed at the application of logistics in the field of business 1950s. after many years from Ford other automakers responded to the need for many models, each with many options, but with production systems, like Toyota production system by Ing.Taiichi Ohno develops the idea of Sakichi Toyoda & Kiichiro Toyoda and gives birth to the Toyota Production System (TPS)This system in essence shifted the focus of the manufacturing engineer from individual machines and their utilization, to the flow of the product through the total process and the evolution of this system help toyota to become one of the most important player in its industry.⁴

In 1950s the trend of logistics was extended to transportation management with the development of intermodel containers together with ships, this was the prerequisite for supply chain globalization that come much later.⁵

During 1960s-1970s the man start the use of computer. Before this period it was difficult because all transaction and records were done manually with the computerization of the data it open the door for making innovation in Business Logistics and logistics planning.⁶

The 1980s was the beginning of a sea-change in logistics in the history of supply chain management. The emergence of personal computers in the early 1980s provided tremendously better computer access to planners and a new graphical environment for planning.

Ing. Joseph Orlicky developed (MRP) material requirements planning that is an inventory control system that consist in calculating how many parts or materials of particular types are required and what times they are required. It was the answer to Toyota system. The first company to use MRP was Black & DECKER in 1964, By 1975, this system was implemented in 700 companies, This number had grown to about 8,000 by 1981. Material requirements planning(MRP) grew to encompass more manufacturing processes, prompting many to call it MRP-II or Manufacturing Resource Planning. By 1990, these systems had expanded beyond

³ Lean enterprise institute; A brief history of lean.

⁴ Takahiro fujimoto; oxford universty. the evolution of a manufacturing system at toyota, 1999 page.59

⁵ Ronald h. ballou. Case western university; the evolution and future of logistics and supply chain management

⁶ Kee-hung lai, T.c.e chang; just-in-time logistics page 34

inventory control and other operational processes to other back-office functions like accounting and human resources, setting the stage for enterprise resource planning(ERP) “Enterprise resource planning, encompassed the entire business model, including linkage to the supply chain to the customers.materials management, especially lean material management, was a critical part of the ERP system model” (Dr. Donald H. sheldon, Lean materials and planning execution p.4)

In the 1990s the logistics use was implemented more by the emergence of (ERP) systems. These systems were evolved in part by the successes achieved by Material Requirements Planning systems developed, in part by the need to integrate the databases that existed in almost all business and rarely talked to each other, and in part by the attention that existing systems might have had failures as a result of not being able to handle the huge data. In spite of some significant problems in getting the ERP systems activated and working, by 2000 most large companies had installed ERP systems. The result of this change to ERP systems was a high improvement in data availability and accuracy, The new ERP software also increased recognition of the need for better planning and integration among logistics components. The result was a new generation of "Advanced Planning and Scheduling (APS)" software

The 2000s: Logistics and Supply Chain Management

The start of the 21st century were characterized by a slow evolution from logistics to supply chain management in every sector also after the crisis 2008 the vision of logistics has changed company started to think about it's supply chain more. In the global business small and medium sized firms accepted difficultly these changes in fast way the supply chain operations.

Conclusion: There are several lessons to be learned from the past

Both logistics and supply chain share the same root in military concept. The logistics costs and time in past were high for any business and there was an unrealized chances to reduce these factors to get more economic advantages from it's operations.

1.2 Definitions of Logistics Management

Logistics is a general concept, which has different definitions for different industries.

Logistics is simply defined as the art of managing the flow of goods, product, services, information and people from one place to another. It encompasses a harmonization of various professional activity like planning, controlling, managing, directing, coordinating, forecasting, warehousing and transportation.⁷

Logistics as such as has transformed over the decades from supporting, cost-absorbing function into strategic factor with the potential, in a globalized and competitive environment, to be the decisive competitive advantages.

Logistics is described as the “5 rights” it is the process of ensuring that a product or services is:

- In the right place;
- In the right time;
- In the right quantity;
- at the right quality;
- at the right price;

This mean getting the right order, then getting the right materials and information to make the order, in fact making the order, packaging and labelling it, transporting it to the place where the customer will buy it and distributing it.⁸

Christopher (1998) define logistics as “the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory and related information flow through the organisation and its marketing channel”⁹

Logistics management “is the part of supply chain management that plans, implements, and control 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 customer’s requirements” (the Council of Supply Chain Management Professionals,2013)¹⁰

⁷ <http://ezine.artical24.com/future-logistics-iaia-1.2w/0>

⁸ Ballou R. H 2004 business logistics/supply chain management: planning and controlling the supply chain 5th edition pp 75-80

⁹ Christopher, M.G logistics and supply chain management 1998

¹⁰ <http://www.csmp.org>

1.3 The distinction between logistics and supply chain management.

Supply chain management is the integration of key business processes from end user through original suppliers that provides products, services and information that add value for customers and other stakeholder.¹¹ The relation can be subject to misunderstanding since these terms are often used interchangeably. Before, the term of logistics tended to focus on transportation and warehousing forms, and the term supply chain management would consider sourcing as well as final distribution. From the early years of 2000 the meaning of both has converged.

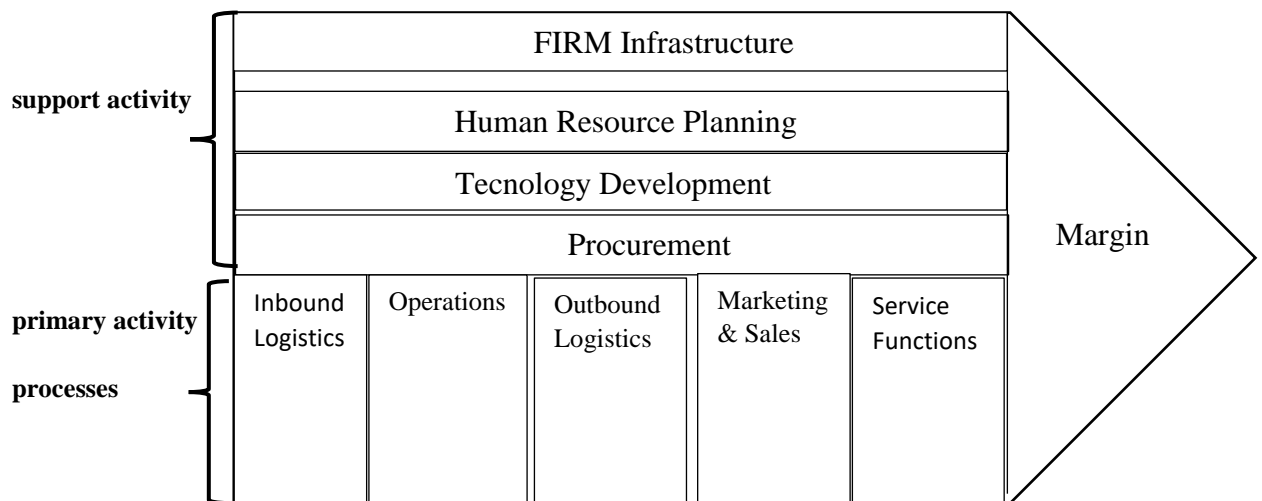
Porter framework and its implications:

Porter helps us to understand the operations through which a firm get competitive advantages and creates value and the result will be more profitable.

There was conducted a lot of studies to find in which way firms can get advantages on others firms. The value chain framework of Michael Porter model help us analyzing specific activities through which firm can create more competitive advantages and create value.

Porter suggests dividing the business value chain into activities primary and secondary. Because the model easily pools distinct activities it makes it easier to see and identify opportunities for competitive differentiation or improved efficiency and as such it is a popular framework for businesses.

Figure 1, Porter value chain frame work



source; Porter: competitvie advantages

¹¹ (cooper et al., 1997 p.2; lambert et al. 2006, p.2)

Porter first divided activity pools to first five primary activities:

1. Inbound logistics which include inventory planning, receiving, storing and transport planning
2. Operations includes assembly, packaging, machines, maintenance and testing all other activities.
3. Outbound logistics include all activities such as distribution, order fulfillment to deliver the final product to customer.
4. Marketing and sales include activities retail management, advertising, selling which associated with getting buyers to purchase the product.
5. Services functions including customer support which enhance product's value.

Second the support four secondary activity pool:

1. Procurement of machines, services and raw material.
2. Technology development such as design, process automation and research and development which support the value chain activities.
3. Human resources management include education, the activities associated with recruiting and compensation of managers and employees.
4. Firm infrastructure include. accounting, quality management, legal, training, upgrading and spare parts management.

With Porter's framework we can see two approaches to his analysis: The first is where can we create a competitive advantage, the second is where can we create a cost advantage, Both are of course linked as, typically, increasing competitive advantage means increase costs, but as long as the customers are prepared to pay the premium to cover the extra costs, or the organisation is able to procure the resources required to create the advantages at the same or lower costs, then the profit will be positively impacted.¹²

The implication of Porter framework:

The implication in Porter's thesis is that the organizations should look in each activity in its value chain and evaluate if they have advantages in the activity. If they don't do the argument goes on, then maybe they consider outsourcing that activity to a partner who can provide that cost or value advantage.¹³

¹² Micheal E. porter: on competition,1995. chapter 3 how information gives you competitive advantage

¹³ Martin Christopher. Logistics and supply chain management 3rd edition, 2005, p. 14

The main defect to Porter's is that the boundaries of a firm on the input and the output side are taken as given, and don't take care from transaction cost-based, like make and buy consideration. These recent years changing firms inward and outward boundaries, becomes a key success strategy where this strategy help the firms to respond to the changing economic environments.¹⁴

Logistics objectives: logistics has the following objectives

- **Economies of freight:** freight is the most source of cost in logistics. This cost can be reduced for example by long distance shipments, selecting a proper mode of transport, etc...
- **Reduction of inventory:** inventory is one of the factors that affect the profit of firms. in traditional inventory system, firms had to carry out lot of inventory in order to satisfy the customers requirement and to ensure high customer services. But by doing this the firms have cost of maintaining this inventory and this will affect negatively the profit, logistics in this case help keeping inventory at lower levels, this done by small and frequent supplies.
- **Delivery performance consistency:** the right manner of planning of transportation modes with inventory will ensure that the customer request will arrive on time not after or before also because this can mean contractual penalties for the firms.
- **Eliminate waste:** products may be damaged for unwell packaging or frequent handling and other reasons this damage add to the cost of logistics the use of right methods in logistics packaging will eliminate waste.¹⁵

Logistics is the responsible of managing three key flow inside the organization.

First Material flow of the physical goods from supplier through the distribution center to stores; according to (Donald Water) logistics is responsible for the movement and storage of materials as they move through supply chain, which include these activities.

- **Procurement or purchasing:** the flow of materials through an organisation is usually initiated where procurement send or purchase order to supplier. This means that procurement finds suitable suppliers, negotiates terms, organise delivery, and does everything to get material into organisation. And now it become one from the important link with upstream activities.

¹⁴ Martin Huber, Implications of digitizing Miniaturization and convergence in media and entertainment, 2001, p. 74

¹⁵ Edward H. Frazelle Supply chain strategy pp.38-67 and pp 172-173

- **Traffic or inward transport:** to move the materials from suppliers to organisation receiving area this should find the suitable transport to have deliveries on time and on reasonable costs.
- **Receiving:** make sure that materials delivered with items in the order for example the inspection of damage.
- **Warehousing or stores** traditionally, in manufacturing companies, warehouse for production raw materials used to be under the control of the procurement department while finished goods warehouses at factory and distribution centers used to be controlled by a marketing department. These outbound warehouses used to be a part of logistics, responsible to move materials into storage areas, and making sure that materials can be available quickly when needed.
- **Stock control:** sets the policies for the inventory. It considers the materials to store, stock level, order size, order timing.
- **Order picking:** finds and remove materials from stores. The order from customer come, then located, identified, checked, removed from racks, consolidate into single loading, packing and moved to departure.
- **Materials handling:** it moves material from one operation to the next. And moves materials picked from stores to the point where they are needed, the goal of material handling is to minimize waste through the operations.
- **Transportation:** takes material from the departure area and deliver them to customer.
- **Physical distribution management:** is a general term of the activities that deliver finished goods to customers, including outward transport
- **Reverse logistics:** process related to returning of materials from the consumer to the point of manufacturing for re-processing.¹⁶ The two main reasons for the rise of reverse logistics is globalisation of markets and policies for environment protection. A successful reverse logistics could help increasing the services level of the companies and reduce the costs of producing process.

Second Information flow: of demand data from the end-customer back to purchasing and to suppliers, and to the retailer from the supplier, so material flow can be well planned and controlled.¹⁷

¹⁶ Donald water. Logistics/ an introduction to supply chain management, 2003 p.13

¹⁷ Alan Harrison, Remko I. van Hoek, logistics management and strategy, 3rd edition, 2008, p.6

Third Resources such as finance, people, equipment which help the supply chain to operate effectively.

Logistics is a part of the corporate strategy whereby firms contribute to the primary activities of their value chain,¹⁸ by creating cost and services advantages.

1.4 Types of logistics relationships.

First vertical relationship: these refer to the normal linkages between firms in supply chain such as retailers, distributors, manufacturers, and parts and materials suppliers. These firms relate to one another in the way that buyers and sellers do in all industries, and significant attention toward making sure that relationships help to achieve individual firm and supply chain objectives. Logistics services providers are involved on a day-to-day basis as they serve their customers in this traditional, vertical form of relationship. Vertical partners have complementary, non overlapping skills and relatively equal in their contribution to the value-added efforts.

Second horizontal relationship: usually have overlapping capabilities, these includes those business agreements between firms that have cooperating positions in the logistics process. To precise a horizontal relationship maybe thought of as a services agreement between two or more providers firm based on trust, cooperation, shared risk and investment. Each firm is expected to contribute to the specific logistics services in which it specializes, and each exercise control of these tasks while striving to integrate its services with those of the logistics providers. For example two ocean carriers that share the ship capacity.¹⁹

There are four general types of logistics services providers.

- First traditional freight forwarder: they only focus on operations efficiency in freight services. They position themselves as cost leader in freight forwarding by offering lower rates than customer can obtain from the transport carriers directly.
- Second transformers: they are firms that have expanded their services scope to value-added logistics services and technology-enabled logistics services. In addition to the services provided by traditional freight forwarders, they add value by sharing resources between customers.

¹⁸ Lai, K.H, Services capability and performance of logistics services providers, 2004 pp 385-399

¹⁹ John J. Coyle, C. John, Robert A. Novack, Supply chain management, 9 edition. P. 109

- Third nichers: they target nich markets and specialized in value-added logistics services. They complement full-services providers by undertaking outsourced logistics activities where they have a comparative advantages.
- Fourth full services providers: the position themselves as services leader by leveraging their services capability to create superior services performance. In addition to operational efficiency. The logistics offered by them are wide ranging like Maersk logistics.²⁰

The Third-Party Logistics (3PL).

The main member three parts. The first is the demand party of logistics services, which is mostly industry enterprise, the industry enterprises usually outsource the logistics operation to 3PL enterprise in order to exert to core advantage. The second is the supply party of logistics services. The third is the end customer.

The term 3PL was first used in early 1970s, to identify intermodal marketing companies in transportation contracts (IMCs), until this point traditionally contracts for transportation had featured only two parties, the shipper and carrier, when intermodal marketing companies entered in the business as intermediaries that accept shipments from the shippers and tendered them to the rail carriers and they become the third party to the contract.²¹

The increase use of third party can be attributed to information technology and the spread use of internet which permit companies to have more and more information about transactions.

According to the council of supply chain management a third-party logistics (3PL) is defined as “firm that provide multiple logistics services for use by customers. Preferably, these services are integrated, or bundled together, by the provider, among the services (3PLs) provide are transportation, warehousing, cross-docking, inventory management, packaging and freight forwarding.²² Essentially 3PL refer that a firm outsource the logistics part of its supply chain to a third logistics providers.

²⁰ Lun Y.V, Lai K.H, Cheng T.C, Shipping and logistics management, 2010 pp 124-126

²¹ Shahraki, Alireza, article: LSP, 3PL, LLY, 4PL. Which one come in useful for outsourcing cycle

²² council of supply chain management (CSCM,2016)

Characteristics:

- **Personalized services:** the number of customers is generally small but the services generally last long. the 3PL not only accomplish traditional logistics business but also offer specialized services according to customers demand to increase the efficiency and decrease the cost.
- **Associate relationship:** the third-party logistics is not just a freight forwarding company nor a courier company, it is a strongly related to the customers whole business. Such as sales plan, inventory management and ordering plan, so the relation is far beyond the buyer-seller and can be regarded as a strategic associate relationship.
- **It-based services:** information technology is the necessary condition for third-party logistics development. It enables the fast and accurate data transmission, the automatic management on warehousing and freight and the automatic processing in ordering and purchasing.
- **Integrated services:** third-party logistics typically specialize in integrated operation, warehousing and transportation services that can be scaled and customized to the customers needs based on market conditions and the demands, delivery services requirements for their products and materials these services go beyond logistics and included value-added services related to production and procurement of services.²³

Advantages of third-party player (3PL).

There are advantages to using third-party logistics service providers which include the following:

- **Focus on core strengths:** Allows a company to focus on its core competencies and leave logistics to the experts.
- **Provides technologies flexibility:** Technology advances are adopted by better third-party logistics providers in a quicker, more cost-effective way than doing it yourself. Third-party logistics may already have the capability to meet the needs of firm's potential customers.
- **Flexibility:** The use of a third-party logistics providers offers companies flexibility in geographic locations, services offering, resources and workforce size.
- **Cost savings:** Third-party logistics offer the economic principles of specialization by building up logistics infrastructure, methodologies and computer-based algorithms to maximize shipping efficiency to cut a client's logistics costs.

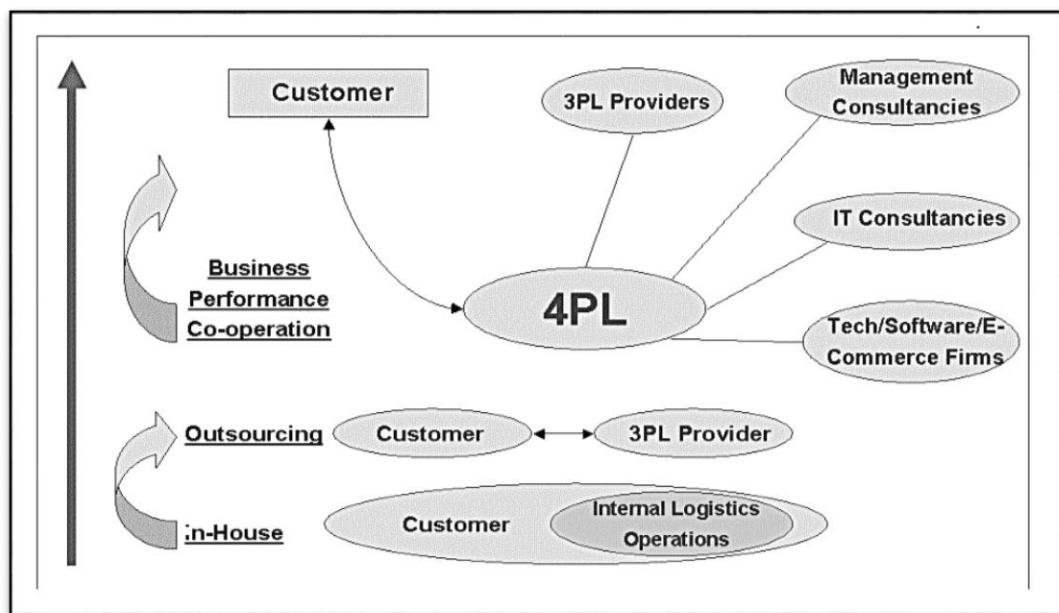
²³ International conference on management and information technology, Yichang.china, 2013 pp 190-193

- Capabilities: smaller companies have to make large investments to expand their logistics capabilities. It may be more cost effective and faster to add capabilities through third-party logistics providers.²⁴

Evolution and emerging trends in intermediaries:

the evolution of third-party logistics (3PL) to lead logistics provider (LLP) and fourth-party logistics (4PL) is to move from the mass services segment market to the professional service market segment.²⁵

Figure2. The evolution of the market



source; Frost&sullivan

the worldwide communication and information flows accelerate at an exponential rate, logistics providers must be equipped with up to date data tools and technology solutions, in order to become a fourth-party (4PL) logistics and join the supply chain elite, the right pieces must be in place to ensure success. The technology solutions enable logistics providers to

²⁴ Paul A. Myerson, supply chain and logistics management made easy. p 194

²⁵ Lin LI supply chain management, 200. p 105

collect the most accurate, real-time data for their customers, thus granting an advantages that propels them into the evolving communication age.

Second Lead logistics provider(LLP).

Definition: the LLP has role of coordinator that controls the logistics services processes of entire network. The logistical services are provided by sub-contracting companies. The LLP acts only as the organiser of logistical processes without the need to have own assets. The LLP who are in the boundary between 3PL and 4PL, as they provide a services for goods that themselves own, but also for these companies, and The concept of 4PL is closely related to the concept of LLP.

Fourth-party logistics (4PL) definition: the term fourth-logistics party was introduced in 1996 by Bob Evans of Arthur Anderson (now Accenture) which it defined as follow: “A 4PL is an integrator that assembles and manage the resources, capabilities, and the technology of its own organizations to design, bulit and run a comprehensive supply chain solution.”²⁶

The advantages of using a fourth-party logistics is;

First adresssing strategic failures:

- Minimizing the time and effort spent on logistics by the user.
- A fourth-party organization forming a single point of contacts for all aspects of logistics.
- A fourth-party organization allowing for provision of broader supply chain services e.g. IT.

Second addressing services and cost failures:

- The continous monitoring and reassessment of services level achievement.
- The benchmarking of different supply chain processes against world class economies.
- The continous monitoring and improvement of supply chain processes, performance and cost.

Third addressing operational failures:

- Ability to esablish a new and more flexiable working enviroment.
- Opportunity to create a new company culture.

²⁶ Bumstead Jon; Cannons Kempton. Artical.From 4pl to manage supply chain operations ,2002. p.109

- The fact that a new entity makes it easier to eradicate old industrial relation issues.

Fourth additional benefits: Provision of ‘ knowledge management’, the bringing together and effective sharing of knowledge among the identified stakeholder.²⁷

Fifth-Party Logistics

Definition: In the beginning of the 21s century, United States Morgan Stanley is the first ever created 5PL concept. The fifth-party logistics (5PL) is logistics services providers, which provide customers with new collaborative supply chain services, system integration and optimization. Logistics organization set up the integrated linkage mechanisms to achieve the optimization of logistics sytsem; by using technologies, like E-commerce, internet, and information technology IT which play the general role in 5PL businesses. Customer representatives, transport managers, shippers, carriers and even drivers they become users of a certain platform.²⁸

The benefits of fifth-logistics party (5PL): the 5PL can achieve many benefits as below:

- Integrated operations. To meet customers services needs, it helps 5PL to link every phases of the supply chain of the customer cluster, to place the platform system into the customer’s actual operations, and to collect real-time information by using tracking, monitoring, assessment and rapid feedback of logistics operational information.
- Standardized product categories. The systematic convergence through bench-marking can help the realization.
- IT supported services. By strategic design, a multi-interface, multi-user and trans-regional logistics services platform can be built up, where the services platform can be built up, where the services system can provides a variety of services combinations for every customer any time.²⁹

The benefits can be important element. The role Fifth-party logistics in an start which show how the business can be conduct with out assets in good way with the use of technology and informations, and the speed which help any business to achieve its objectives.

²⁷ Alan Rushton, Steve Walker. International logistics supply chain outsourcing, from local global 2007, p.265

²⁸ Alexander Nanopoulos S-BPM scientific research, 2014.

²⁹ Cengiz Kahraman, Sezi Onar. Intelligent techniques in engineering management, Theory and Application, p. 328

University of Manitoba, in Canada, summarize differences between the different intermediaries.³⁰ This table show summary of services provided by type of intermediary

intermediary	Customer broker	Frieght forwarder	3PL	4PL	5PL
Type of services	Tactical	Tactical	Tactical	Strategic	Strategic-IT Supply chain
Basic Idea	Obtain and prepare documentation for the release of import/export, payment of fees, duties and taxes.	Arrange the transport and coordinate the movement of goods, prepare necessary paperwork, arrange storage, and insurance.	Performs multiple, or all, physical logistics functions on behalf of customer.	Performs all supply chain functions for the customer; concerned with the management and improvement of the client' supply chain	Turns customer's supply chain into a function that is completely driven by technology
Resources	Few physical assets, knowledge, and technology assets	Usually owns few physical assets, knowledge and technology assets	May or may not own physical assets, mainly knowledge-based, technology for traking shippments	Few physical assets, extensive knowledge and technology-based assets	Few physical assets, extensive knowledge and technology based assets
Potential benefits	Companies who import/export goods, help streamline customer clearance	Companies, especially smaller firms, how ship internationally, arrange most cost-efficient route for shipping	Companies who lack internal supply chain resources and knowledge	Companies with complex supply chains	Large companies with highly complex supply chains
Potential Drawbaks	unknown	Unknown	Focused more on moving freight than the management and efficiency of the supply chain	Loss of control and relationships with supply chain members, risk in long-term relationships	Loss of control and relationships with supply chain members, risk in long-term relationships

³⁰ A. Hicksons, B. Wirth, Supply chain intermediaries study, p. 13

1.5 Annual Third-party logistics study 21st 2017.

DR. C. John Langley initiated this study investigate the global outsourced marketplace of shippers and third-party logistics provider (3PL). Since the study was published 1996, the over business enviroment and logistics sector has experined a considerable change and its evolution continously.

This year the study examined four topics and according to Dr. Langely they are very relevant not only for the shippers, not only 3PL but also to the relationship between them. If we thinks about what supply chain really means, it means that the organization's have to work together to create value.

Reserchers of the 2017 report found that few 3PLs have evolved from tactical services providers to collaborative partners that take on greater accountability and control. Providers have also increased their technology expectations, and 3PLs are responding with increased capabilities.

- The annual report show that shippers and their 3PL still to move toward meaningful partnership. Both parties 91 percent of 3PL users and 97 percent of 3PL providers reported that their relationship are successful and that their work go to positive results.
- The annual report show also the 75 percent of those who use logistics services (shippers) and 93 percent of 3PL providers said that the use of 3PL services has contributed to improve logistics cost production. And 86 percent of shippers and 98 percent of 3PL providers said that the use of 3PLs has contributed to improve customer service.
- The annual report researchers found that fluctuating, increased shippers demands and disruption with in the industry are creating a volatile decision-making enviroment for shippers and logistics providers trying to optimize the supply chain. Both parties are increasingly using information and analystic to drive the decision. Nearly 71 percent of shippers said that real-time analytics from 3PL help them better understand shipping alternatives.
- The annual report evidence the types of tehcnology that 3PLs use is becoming advantgeous, differentiating factor while the differences between shippers feel is important and their rating of their 3PLs current information technology (IT) capabilities has make further opportunities for improvement remain.
- Also the annual report show that third-part logistics providers have turned to merger and acquisition to fill gaps in services areas, expand their global network, the value of M&A

nearly doubled from 2014 to 2015, growing to \$173 billion from \$87 billion, and cross-border deal values have quadrupled from 2014 to 2015, growing to \$115 billion from \$28 billion.³¹

“This year report paints a new picture about what a successful collaboration look like” said Frank D Monte, principal, strategy and operations, Capgemini consulting “shipper continue to push their 3PLs to become more innovative in the areas of logistics technology and advanced analytics, while also developing the appropriate capabilities for geographic expansion, 3PLs are responding by offering advanced and relevant technology to help shippers better serve their customer.³²The study describes some of the potential with on-road automation, such as driverless vehicles.

Future Trends:

since the improvement quality of the new generation of logistics parties, organizations are looking forward their logistics department into virtual format. Therefore, in a more developed way, they would use the disciplines of zero party logistics.

Zero party logistics is the elimination of 3PL and 4PL organizations, using 5PL disciplines to transform a company into a virtual organizations, in other sense the traditional logistics department become nothing more than an integrated information chain between buyers and carriers; all planning using either a company’s own resources or 5PL services.

More recently, the concept of seventh-party logistics (7PL) 3PL+4PL has emerged, coming from mixing the 3PL domain with the concept of 4PL. In fact it is the fusion of physical and process expertise of 3PLs with the enhanced knowledge-based macro strategic consulting and it capabilities of 4PLs. There is new version of logistics parties are not deeply investigated and they re-expected to grow in next years.³³

³¹ Third-party logistics study, 21st annual report 2017. <http://www.3plstudy.com>

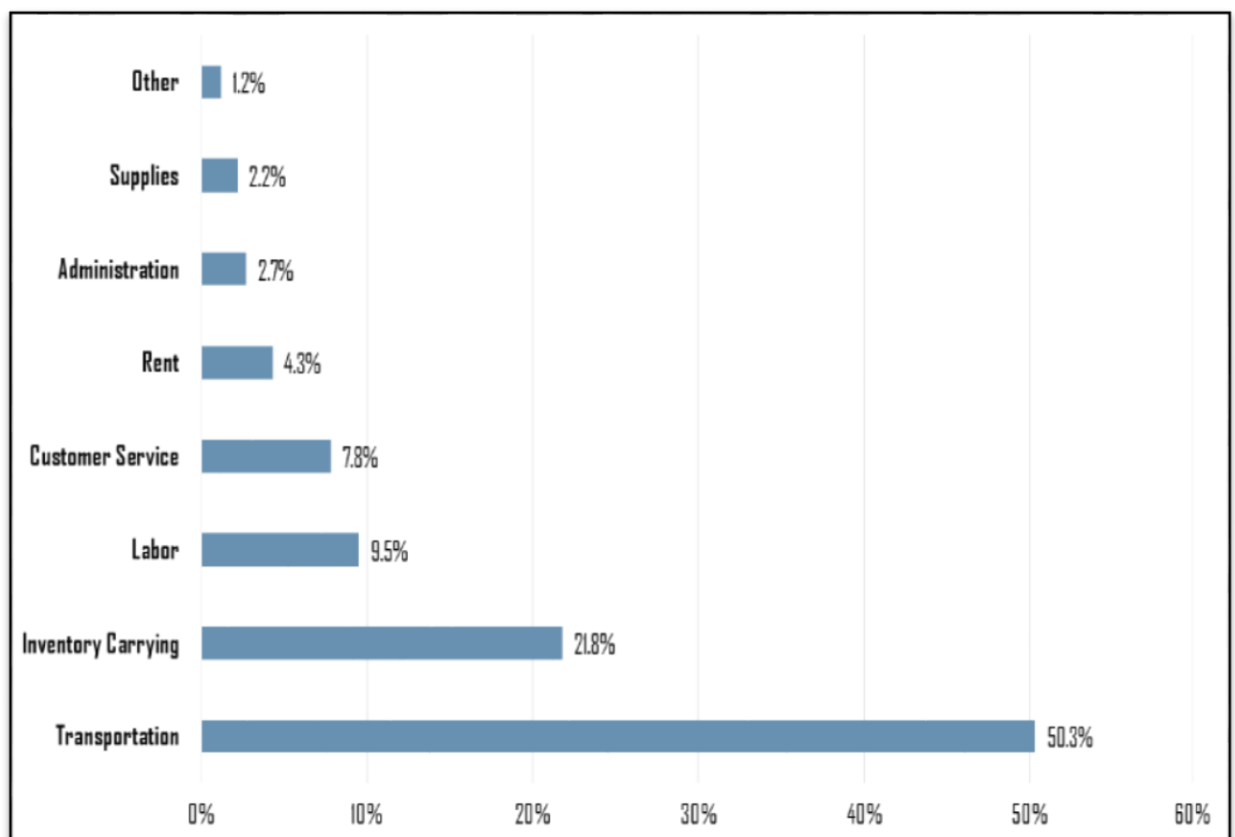
³² <https://www.capgemini.com/news/2017-global-state-of-logistics-outsourcing-study-reveals-evolving-role-of-shippers-and/>

³³ Reza Farahani, Shabnam Rezapour. Logistics operation and management. 2011, p 81

1.6 The cost of production issues and relation with logistics

According to the investigation of National Council of Physical Distribution Management(NCPDM) 1982 around one third to two third of the expenses of enterprises logistics costs are spent on transportation. I found that from studies conducted in logistics area in developed countries 50% (on average) from the cost of production of any commodity in developed countries can be traced to logistics activity. As most companies in these countries use similar production techniques, so it is not possible to achieve a competitive advantage or strengthened only through reducing the cost of logistics activities,

Figure 3. Logistics cost Breakdown.



Source: Ellis global logistics

- Total logistics show much about the locational dynamics of logistics activities, especially distribution center, since they indicate the weight of most important factors.
- Inventory carrying costs, they include the costs of holding goods in inventory such (warehousing, taxation, insurance and obsolescence) and this cost has an impact with a share of one fifth of total costs.
- Labor costs involve the physical handling of goods such as (packaging and labeling)

- Customer service perform receiving and processing orders from customers. Under this circumstances the distributor willing to pay higher rent to take advantage of logistics site and this strategy help them to reduce the lead time.
- Transportation costs remain the most important element of logistics costs.

1.7 Retail logistics.

Logistics in a retailing context refers mostly to multi-echelon on logistics systems, meaning that there are many nodes from the original supplier to final store destination.

Larger retail deal with a wide variety of products, and this created a need for a systematic of movement of goods until they delivered to the customer. Retail logistics ensure that everything in place to offer better delivery and low prices services by way of efficient logistics.

Therefore, retail logistics present itself as a very complex logistics system, the flow of goods and related activity depend strongly on external factors such as the supplier size and structure and on internal factors which can be interpreted as procurement and distribution instrument, which influence the quantity and the quality of the output of retailing logistics system.³⁴

Functions of retail logistics system.

First: the increased product variety in store push the retailers to follow an effective logistics system taking care of the flow of merchandise and the arrangement of transport aspects.

Second: the system satisfies the customers by taking the right order to the right customer, the right place. This requires a planned approach right from the starting point to delivery point.

Third: profitability of the present and future are maximized by the logistic system by means the fulfillment of orders in a cost-effective way.

Fourth: it ensures the availability of infrastructure such as transport, inventory and administration, the inter relationship that exists between these elements are effectively coordinated.

Fifth: retail logistics system strives to add value for the customer, for this the cost elements in supply chain are brought under the direct control of the retailers. Depending on sales volume,

³⁴ Herbert Kotzab, Retailing in scm-perspective, 2005 p.76

retailers create central distribution centres. They decide on major investment in property, plant and equipment with associated overheads.

Sixth. The functions incorporated in retail logistics are summarized:

- The physical movement of goods.
- The holding of the goods in the stock holding points.
- The holding of goods in quantities required to meet demand from the consumer.
- The management and administration of the process in modern complex distribution system.

1.8 E-commerce

The technological innovation in 21st century has changed how the business can be conducted. It is essential for organization to have e-commerce presence and effectively use the internet to expand their business, e-commerce is a powerful chance to any business to arrive in all parts in the world.

Classifying E-commerce transaction: There are three forms to classifying the e-commerce transaction

- Business-to-consumer e-commerce
- Business-to-business e-commerce
- Consumer-to-consumer e-commerce

This forms of e-commerce are defined by the nature of the parties that conduct transactions and by the types of transaction they undertake.³⁵

E-commerce definition:

E-commerce refers to the use of electronic means and technologies to conduct commerce (sale, purchase, transfer, or exchange of products, services and/or information including within business, business-to-business (B2B), and business-to-consumer (B2C) interactions. Delivery of products or services over or outside the internet.

³⁵ David Vanhoose, E-commerce Economics, second edition, p. 9

Logistics is the Backbone of E-commerce:

Logistics plays a vital role in delivering products to individuals speedily and with complete order flexibility. Logistics solutions are provided by companies, manufacturing, or dot.com operating in B2B or B2C domain, where they are providing online trading or e-commerce as a part of their services package. Services support of material movement is offered by logistics companies. Manufacturing companies in business-to-business domain requires e-logistics solution for their e-commerce transactions, which may evolved by them or provided by the service provider.³⁶

The component of e-commerce:

- Network: it includes internet, internet is the foundation of e-commerce and the carrier of commercial business information.
- E-commerce user: it includes personal consumer and business consumer.
- Authentication authority: the authentication authority (CA), the authority recognized by law, is responsible for issuing, managing digital certificate.
- Distribution center. It is in charge of sending goods that cannot be delivered on line to consumers and keeping track of goods flow.
- Online bank. It provide the seller and buyers the traditional bank business, such as settlement.
- The administration of the commercial activity, it consists mainly of departments of industry, custom, tax, and trade.³⁷

1.9 Global Trends and challenge

Drivers:

Macro Economic Trends (Raising prices):

- **First Regulation:** the governments policies and regulation affecting transportation have an important impact on capacity and carrier pricing regulations as well as social regulations addressing safety, labor and energy issues. For instance, hours of services restrictions for equipment operator, environmental constraints on port expansion and local noise policies that restrict landing and departures at night. This reduce capacity, services and costs.³⁸

³⁶ Vinod V. Slope, Logistics Management 2007, p.158

³⁷ Zheng Qin. Introduction to E-commerce 2010, p. 9

³⁸ Theodore Stank, Thomas Goldsby. Global transportation management trend, industry week.2007

- Second higher tax rates: in western countries causing companies to constantly evaluate its network footprint. The globalization of supply chain was the reason of the increased volume in international trade which cause goods to cross national boundaries many time during the production process and each time these goods cross border they are subject to indirect tax compliance obligations including, export licensing, customs and excise duty reporting, customer duties on importation and export compliance obligations.³⁹
- Third raising wages worldwide: are pushing manufacturing to developing nations and driving innovation in automation.
- Fourth Near-perfect consumer information is causing higher market competition.

Supply chain disruptions:

Supply chain have become longer and more complex, the frequency of supply chain disruption seems to be increasing.

Recently the World Economic Forum (WEF) launched a report with a co-operation with Accenture and presented in WEF annual meeting in Davos, Switzerland, it indicates that significant supply chain disruption reduces the share price of affected companies by much as seven percent on average. Natural disaster and extreme conditions are threat to supply chain.⁴⁰

2013. typhoon Haiyan Philippines and earthquake in China.

2014. West Coast port strike, typhoon Halong and flooding in New York city.

2015. Tianjin port explosion, Chennai floods.

2016. military coup failed in Turkey, Brexit, Zika, terrorist attacks and hurricane Matthew.

2017. hurricanes Harvey and Irma.

³⁹ Philip Robinson. Ernst & young report, Managing indirect taxes in the supply chain, pp 14-30

⁴⁰ Steve Culp, article Supply chain disruption a major threat to business, Forbes media

Chapter 2

2 Amazon case

About Amazon.com:

the Amazon.com case illustrate how commerce and business can be conducted on the internet, despite the failure a lot of dot-companies.⁴¹ The company was found in July 1994, based Seattle Washington in the United States of America.

Figure 4. Amazon Future



Source; The economist.

Since its chief executive officer and founder Jeff Bezos, envisioned as a virtual book store in 1994, it has become a retail giant that generate \$US135.99 billion 2016⁴² respect \$US 74.45 billion in 2013. This amount come from its support of more than 2 million companies that make use of its website to sell its product and distribute them to customers, with a means of advertising and selling their product, but offers to store these products also in its own centers; pick, pack and ship them through providing customer services, including handling returns for this companies.

Amazon transformation:

The last few years, Amazon has moved gradually to develop an in-house achievement and delivery network in an effort to extra cost-effectively manage the enourms flow of packages generated by the success of it e-tailing storefront. For many years the company has relied on third-party provider to deliver packages like US postal services and other package carriers like

⁴¹ Peng Liang, Deborrah C. Turban, electronic commerce. Managerial and social network 8 edition p. 104

⁴² Amazon annual report, investor relation. http://phx.corporate-ir.net/phoenix.zhtml?c=97664&p=irol-sec&control_selectgroup=Annual%20Filings

the United Parcel Services (UPS) and Fedex⁴³. The Shipping cost and concerns about services disruption have forced the company to look to another means of distribution.⁴⁴

In process of developing its network to support those services, Amazon has built out an infrastructure that now include 145 warehouse around the world (84 in the United State, 4 in Canada, 29 in Europe, 15 in China, 10 in India and 7 in Japan). that account for the huge number of 40 million square feet.

in 1997 Amazon patented the concept of ‘one click’ that allow customer to make purchase with a single simple click using the data previously entered in its web site. In order to accelerate Amazon its growth path, in term of know-how and also in user databases, and from 1998 Amazon.com start acquiring companies that can help him to increasing its logistics competitive advantages over the competitors.

2.1 Amazon Acquisition companies:

The acquisition of IMDB 1998, the largest online archieve of movies, tv show, and celebrities, no one know why amazon make this operation but Jeff Bezos has announcend later that Amazon will sell movies, IMDB after the takeover from Amazon remain independent from Amazon.com and third party platforms and now provide links to Amazon where browsers can find the movies to purchase, amazon has created integrated system aim to satisfy a wide range of desires on the part of contemporary movie fans, Amzon has forged this connection as literal, hypertextual link, amazon begun offering movie download since 2006.⁴⁵

Alexa.com in 1999 a company that was specialised in compiling web navigation software for \$US 250 million.

accept.com an internet start-up company run by former Netscape employees that specialised in developing technology for online transactions.⁴⁶

2005 customflix on-demand distributor for independent film.

2007 Brilliance Audio independent producer of audiobooks.

2008 Woot online discount retailer for \$US 110 million.

⁴³ Lin LI supply chain management 2007, p.106

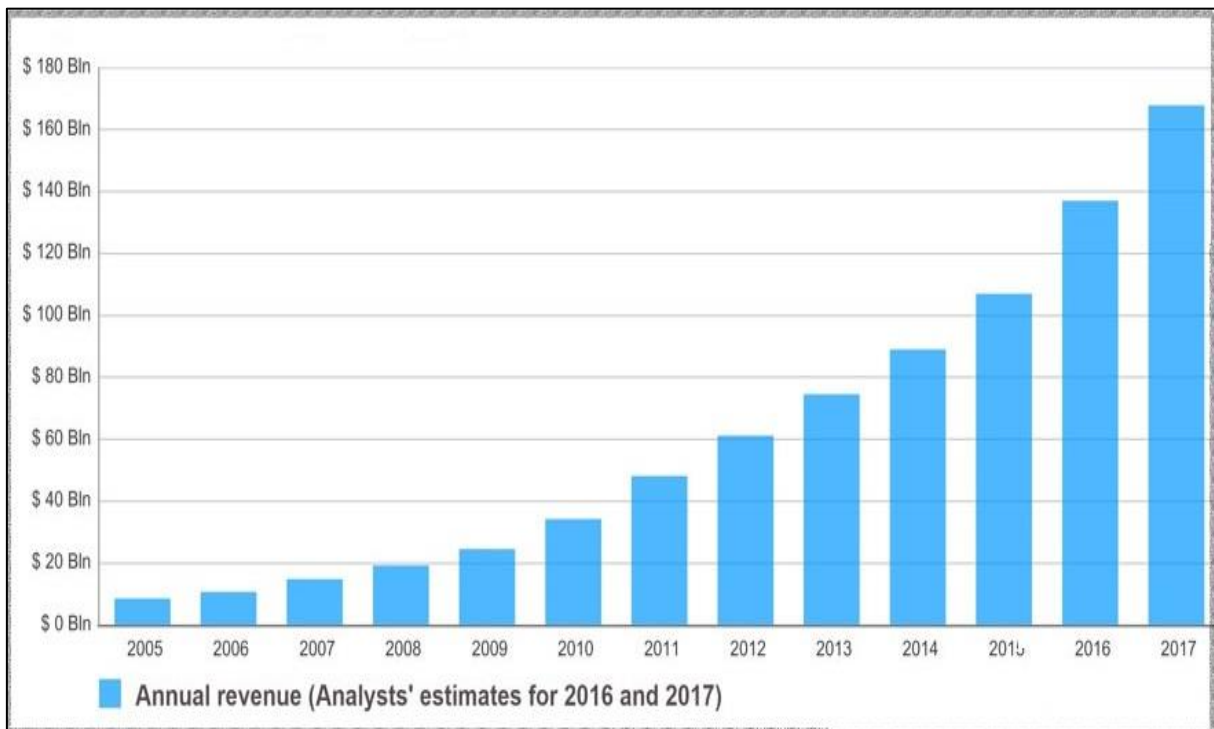
⁴⁴ Dc velocity magazine, artical amazon’s 3pl encroachment to force traditional providers to overemphazis IT

⁴⁵ Pill simone, The age of platform. 2011

⁴⁶ Colin Combe, Introduction to e-business, 2006, p. 352

2009 Zappos online shoe retailer, The acquisition made Amazon a major competitor in footwear and apparel industry.⁴⁷

Figure 5. Amazon's revenue growth estimated by analyst's.



source; Marketwatch

2012 The acquisition of Kiva US maker of robots that serve to coordinate inventories within factories and warehouse for \$US 775 million and started producing the lifiting robots in-home (rebranded as Amazon Robotics in 2015).

The acquisition is a forefront of integretion of cyber and physical aspects of inventories vision of the company, and considered one of the most important acquisition made by Amazon.

Kiva's robots was designed to move the goods from pre-set position in the warehouse shelvs directly where some operator pickup the ordered products along the warehouse conveyor belt.⁴⁸ The laser-guided robots save time and speed the operations inside the inventories. Amazon robotics system in 2017 have some benefits, is flexible, scalable, and its five to six times more productive than manual picking. Plus, without human-scale isles.⁴⁹

In 2017 Whole foods acquisition. Whole food is one of the most important supermarkets in the united state. The huge amount paid in the operation is about \$US 13,7 billion.

⁴⁷ Robin Lewis, Michael Dart, The new rules in retail, 2014, p. 164

⁴⁸ David Lei, John W. Slocum, Dimystifying your business. 2013, p. 144

⁴⁹ <https://archpaper.com/2017/08/architecture-fulfillment-centers/>

The main benefits from the acquisition to Amazon is the following:

First: Amazon can expand its business and primary role in the e-commerce.

Second: Amazon will gain 460 stores of whole foods and become Amazon's supply chain.

"we are determined to make healthy food and bio food accessible" said Jeff Wilke number one in Amazon worldwide consumer.⁵⁰

And just after one day in August 2017 Amazon started to reduce the price of the products to become as a new challenger for the food industry.

2017 The acquisition of Souq.com: is Arabic e-commerce platform. With this acquisition Amazon finally moved to the Middle East specially Arabic countries. The Souq.com is based in Dubai with localized sites for many countries like Egypt, United Arab Emirates, Kuwait, and Saudi Arabia, offering a wide range of goods.

Amazon in the end of September 2017 increased his headcount to 77 percent in just three months which is unbelievable growth. Amazon employed 541,900 people, up 159.500 from the end of June 2017. This increase came from the acquisition of Whole Foods and Souq.com, Amazon now is the second largest company in the United States by headcount.⁵¹

For years Amazon made a lot of investment in reducing the delivery time for its products. Amazon is transforming itself into a logistics company, as it facilitates the storage and sale of goods from third-party vendors.

2.2 Dragon Boat project

The key success to Amazon's in e-commerce is its endless logistic empire, since the company launched Amazon Prime program in 2005, which offers free two-day free shipping to over 27 million subscribers for \$US 99 per year, and this amount does not come close to recovering the transportation costs, but on average the Amazon Prime customer buys twice as much products per year as do other customers. And the growth in Amazon can be attributed to such program.

In 2013 Amazon started a shipping project called "Dragon Boat"⁵² which would take over all shipping and logistics operations direct from India and China to its customers across the United States. The company has mastered its growing shipping empire through data analyzing from

⁵⁰ <http://www.ilsole24ore.com/art/finanza-e-mercati/2017-08-25/borsa-vendite-grande-distribuzione-amazon-tagliera-prezzi-whole-foods--112800.shtml?uuid=AEPIUHC>. In Italian

⁵¹ <https://finance.yahoo.com/news/amazon-now-employs-whopping-542-003442087.html>

⁵² <http://channels.theinnovationenterprise.com/artical/amazon-s-supply-chain-process>

every package its ever shipped- the delivery of the package is algorithmically optimized for speed and efficiency of resources.

Amazon Dragon Boat in 2016 become a launch of a venture “Global Supply Chain by Amazon” Envision Amazon as the hub of the distribution and logistics industries, disintermediating like the big Fedex, DHL but with thousand of middlemen in logistics industry.⁵³

Figure 6. Amazon decrease prices in first day in Whole foods

Price Change on Aisle 3			
Amazon reduces some prices on first day as owner of Whole Foods			
Product	Thursday, Aug. 24	Monday, Aug. 28	% Change
Whole Trade Organic Bananas (per pound)	\$0.99	\$0.69	-30%
Whole Trade Bananas (per pound)	0.79	0.49	-38
Responsibly-Farmed Atlantic Salmon Filet (per pound)	14.99	9.99	-33
Responsibly-Farmed Tilapia (per pound)	11.99	7.99	-33
Organic Large Brown Eggs (per dozen)	4.29	3.99	-7
Animal-Welfare-Rated 85% Lean Ground Beef (per pound)	6.99	4.99	-29
Organic Avocados	2.79	1.99	-29
Organic Baby Kale (per package)	3.99	3.49	-13
Organic Baby Lettuce (per package "Sweet Baby Lettuces")	3.99	3.49	-13
Creamy Almond Butter (per 1 pound jar)	7.99	6.99	-13
Crunchy Almond Butter (per 1 pound jar)	7.99	6.99	-13
Organic Gala Apples (per pound)	2.99	1.99	-33
Organic Fuji Apples (per pound)	3.49	1.99	-43
Organic Rotisserie Chicken	13.99	9.99	-29
365 Everyday Value Organic Butter, salted and unsalted (per pound/four sticks)	5.29	4.49	-15

source: Prices at mid-town Manhattan whole foods. Through Bloomberg.com

⁵³ <https://www.forbes.com/sites/robinlewis/2016/04/01/planes-trains-trucks-and-ships/#1a4521f76d39>

transportation costs, but on average the Amazon Prime customer buy twice as much products per year as do other customers. And the growth in Amazon can be attributed to such program. In 2013 Amazon started a shipping project called “Dragon Boat” which would take over all shipping and logistics operation direct from india and china to its customer cross the United states. The company has mastered it growing shipping empire through data analyzing from every package its ever shipped-the delivery of the package is algorithmically optimized for speed and efficiency of resources.

Amazon Dragon Boat in 2016 become a launch of a venture “Global Supply Chain by Amazon” Envision Amazon as the hub of the distribution and logistics industries, disintermediating like the big Fedex, DHL but with thousand of middlemen in logistics industry.

Amazon Key:

Amazon announced recently the launch of the Amazon key program for the member of prime at noExtra costs, which allowing delivery operator to open member home door if he is out and place the package inside, goods will be safe from theft and wether. The Key will be active in november 2017 in 37 cities around the States, and later will be implemented in all the states But there are some negative opinions because stranger person enter in private home, they are worry about privacy and security.

Amazon not will control just a door but aim to control the entire smart home, it is not a point solution, instead it a visionary strategy about the smart home that will be in next decade.

Amazon Air Prime:

in 2016 Amazon entered into agreements with Atlas air and Air transport to lease 40 cargo airplans. 2017 the company revealed its plan to build new cargo hub at the Cincinnati/Northern Kentucky.

“we are exciting about Amazon Air Prime” said Amazon. It is a delivery system designed to deliver package in 30 minutes or less by aerial vechicles called also drones.

In 2016 The first deliver package by these drones to customer was in England. But until now the company have some problems with the regulation of flying drones over cities around the world.

Why Amazon making all these investments?

the logical idea is that Amazon wants logistics cost to decrease, logistics and freight markets have an excess capacity and Amazon by removing the intermediary will have some value. Amazon consider logistics and supply chain important and strategic elements to the value proposition it offer to its customers. Amazon by the control of end-to-end chain will eliminate the waste of money and time that happen with the use of intermediary like 3PLs.

2.3 Ambitions of Amazon and challenges

The Amazon shareholders expected that the company grow faster or longer than any other big company in modern business history. Amazon is already the biggest cloud computing firm, its set to spend more on TV investments than HBO a big cable channel.

In 2018 Amazon's success will built on two thing, in particular one is its willingness to think about the long term in an era when Jeff Bezos complain about the pressure to deliver results on quarterly basis, and he thinks in terms of year and decades, its expressly been part of it business model take the cash that Amazon's earn and invest it in order to take advantages of what it calls network effect, the idea is that more users attract to its e-commerce site the more attractive it is to other retailers and therefore, the more users come on the site its better than if investing for long term, the rewards will be enormous. The other thing that distinguishes Amazon is the span of activities. Its no longer to think about Amazon as a retailer in its filings, that lists as competitors from media companies, to food manufacturers social networks. The logistics firm is conglomerate that spreads across in commerce. The amazing thing about Amazon is that it could well achieve investors expectation for it, but if it does then it could run into problem, and that problem is the regulators. At the moment antitrust enforces don't particularly worry about Amazon. It is not even the biggest retailer in America where there is the most mature market, but if it gets as big as it'll expected to, then regulators may start to look at it, and not just because of antitrust rules but also because it will become a kind of utility for commerce that collect lots of competitors, with rely on it for service storing warehousing, for example, paying for goods and that dependence on Amazon could be a reason for the governments to look at it closely⁵⁴.

⁵⁴ The Economist Magazine, artical Amazon empire, 23/03/2017

Chapter 3

3 Logistics effects on freight transportation

Introduction:

Freight transportation has always been an integral component of the economic development.

It has merged as one of the most critical and dynamic of the transport sector aspects.

Freight transportation is the main element supporting global commodity and more generally supply chains, complex and functionally integrated networks of production, trade and services that cover all stages of production from the transformation of raw materials to market distribution and after market services.⁵⁵

The globalisation of both the production and transportation of goods has had the effect of internationalising the logistics business. Today's logistics providers must built both a global network of their own officers or partner companies and an effective communication system for the flow of data and information.⁵⁶ The movement of goods from point of manufacture to the end user relies on four basic transport modes; road, rail, water and air. In the recent years a new variation in transportation technology has the potential to influence the design and modification, of maritime, air and land terminal and ports. Any company always seek to find the cheapest route for the product distribution.

In the last decades appeared alot of new variations in transportation technology that had the potential to influnce the design and modification of world maritime ports and terminal.

3.1 Sea Freight Transportation Evolution.

Since the economic recession in 2008, the growth of volume of containers slowed and fallen in line with GDP

Transportation companies are able to cut transport cost as much as 30 percent by sending bigger ships. In last 3 years the world canals faced a new technological and physical revolution by make more expansion projects to increase its capacity which anticipate the growth of the world trade and the impact on the economy of the countries that own the canals like Egypt and Panama.

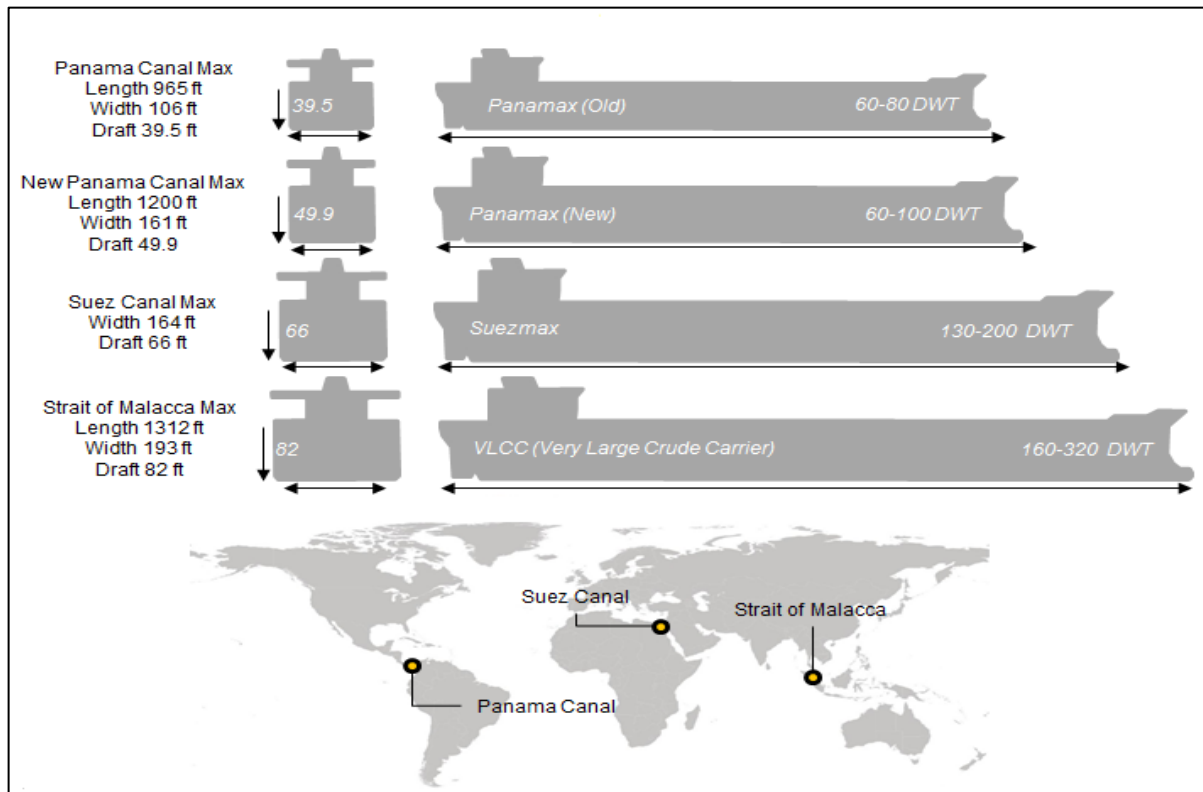
Consultant Mackinesy released in october 2017 report forecasts how the world will be in 2067, and he believes that the ocean container traffic indusrty will have many innovative

⁵⁵ Thomas.R. Leinbach, Cristina Capineri, Globalized freight transport p.1-3

⁵⁶ Bruisma, F. Gorter. Multimodal in infrastructure, transport networks and the location of firms, 2000, pp 259-281

characteristics that will case dynamic change as detailed in the report. Autnomous 50.000 TEU (tweenty foot equivalent unit) containers navigate in seas, and drone like floating containers. In a world where the volume of containers trade is two to five time the current volume TEU is 20-feet.⁵⁷

Figure 7. Ships size and global canals capacity.



U.S. energy information administrative, surveyor 2002

3.2 Suez canal new and its impact on the Egypt and on world trade.

Suez canal is the first canal in the world that was built in order to boost trade and transport, and the Suez canal authority (SCA) of Egypt own and operate the canal.⁵⁸

About Suez canal:

The canal was officially opened on November 17, 1869. Its length 193,30 Km, the canal connects the Red Sea and Mediterranean Sea. The canal was nationalized in 1956 and this action made crisis between England, France and Israel with Egypt's government. The Suez canal corridor is a unique site in the world with percent of global seaborne passing through

⁵⁷ https://www.safety4sea.com/wp-content/uploads/2017/10/McKinsey-Container-shipping-The-next-50-years-2017_10.pdf

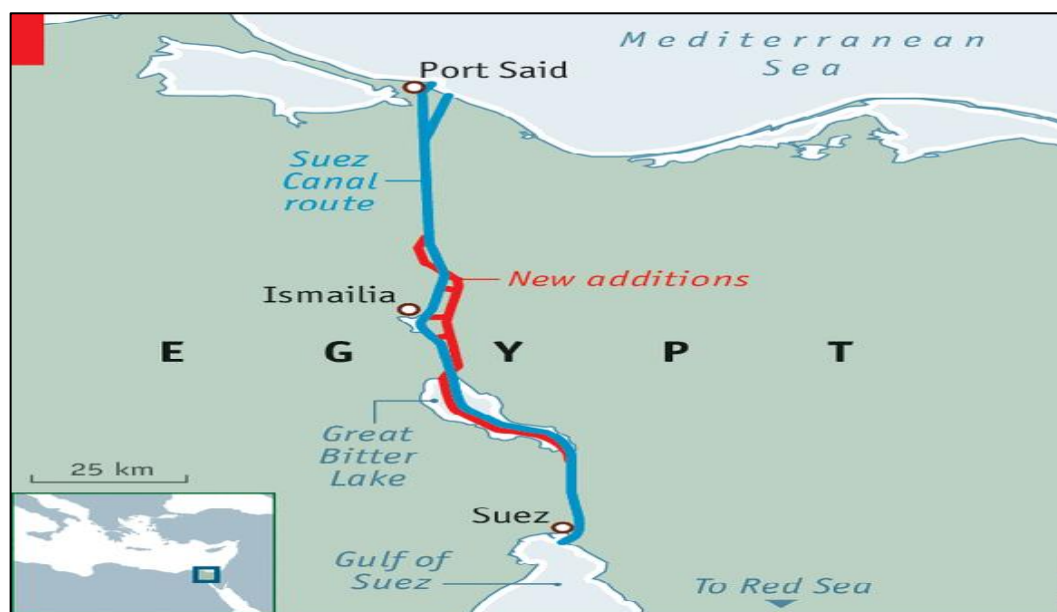
⁵⁸ Maria G. Burns. A Culture and Geographic Encyclopedia, volume 1. P.213

it.⁵⁹ but sites like Singapore make revenue of \$US 180 billion, much more than suez canal which have revenue of \$ US 5 billion so the Egypt decided to invest a lot of money into the expansion project of the canal and this project costs \$US 8.5 bilion.

The project of expansion:

The construction of a new canal from KM 60 to KM 95, and to deepening and widening of the great bitter lakes by-passes and Ballah by-pass, with total length of 37 KM. (total project length 72 KM) Expansion project was started on august 2014 for the expansion of Ballah bypass from 61 meters to 312 meters, this expansion was named the new Suez canal.

Figure 8. The expansion of suez canal project.



source; Suez canal authority

Idea of the project:

The creation of a new canal parallel the existing one, in order to maximize benefits from the old canal and its by-passes, double the longest possible parts of the waterway to facilitate traffic in the two directions in north and south, to minimize the waiting time of transiting ships. In anticipation of growth in world trade. The project go side by side with Suez canal area development. A large number of projects will be implemented. With the establishment of commercial areas and logistics services east of the Suez Canal and East Ismailia and the development of Port Said Port, including the expansion of the container terminal and the establishment of a free zone east of the Suez Canal and the establishment of an area for the

⁵⁹ Xiaobing Li, Michael Molina oil, volume 2. pp 176-377

manufacture and maintenance of containers and ships and a city for research international trade and navigation services and the development of industrial area in the city of Qantara East.

In the new and renewable energy, it is proposed to establish two solar power plants, a cycle consisting of gas and commercial turbines in the north-west of the Gulf of Suez, a wind power plant and another 50 megawatt power plant with geothermal power in the Gulf of Suez which will contribute to support the economy and create millions of job opportunities and benefit from all aspects to be Egypt as a global partner in the field of ports and the establishment of tourist, commercial and agricultural areas.

This project is expected to generate revenues of up to \$US 100 billion per year, contribute to solving the current crisis in Egypt, along with the physical and geographical redistribution of the population through integrated urban projects aimed at reclamation and cultivation of about 4 million feddans. (feddan = 4200,833 (m²) = 0,42 ettari)

Egypt project objectives:

Egypt make a bet on the future by this projects.

- Support the canal area development and turn Egypt into an international logistics centre.
- Increasing the doubled parts of the Suez canal to 50 percent.
- Minimize the waiting time for vessel to become three hours instead of 8-11 hours that will cut down on trip cost.
- Shortening the transit time from from 18 hours to 11 hours for the southbound convoy.
- Increasing the number of ships that the canal can handel daily.
- Attract more ships to use of the Suez canal.

Project return and outcome for Egypt:

- Maximizing competitiveness of the Suez canal with other canals.
- Creating job oppurtunities where 60 percent of population is under 40 years old⁶⁰.
- Increasing the Suez canal revenue from \$US 5.3 billion to \$US 13.226 in 2023.
- Increasing the daily averge of transit vessels 97 instead of 49 by 2023.⁶¹

⁶⁰Arwen Armbract, World economic forum, 6 facts about second suez canal, 2015

⁶¹ Suez canal authority.

In 24 february 2016 the Suez canal authority opened the new side of the channel. This side channel located at the northern side of the east of the extension of the canal, serves the east terminal for berthing and unberthing vessels from terminal any time of the day and the night.

The chairman of Suez canal authority SCA. Mohab Mamish announced that the SACs revenues raised by 3.4 percent within the period from january-october 2017, increasing to \$US 4.3 billion from \$US 4.2 billion in 2016. He added that the number of ships crossing the canal waterway increased by 2.9 percent to 14462 ships from 14053 ships in 2016, while the containers crossing the canal increased by 5.6 percent, to \$US 859 million from 613 in 2016.⁶²

The challenges facing Egypt to become a logistics centre.

Egypt faced two revolutions from 25 january 2011 which left the country with big economic and political problems, the country internal transport system needs much upgrading. The Egyptian state railways operates from mid 19th century about 9500 Km of track, their services are primarily geared to passenger rather than freight, the network track requires overhaul of truck and rolling stock, also the connection from the canal towns like Ismailia and Port Said to Cairo and Alexandria are thus slower. The road haulage sector suffers from a high incidence of informal firms. The country began some projects making many new infrastructure roads and tunnels under the Suez canal, the country needs to make also more in collect its ports on the mediterranean sea in order to make logistics efficient network with the Suez canal.

Conclusion:

The new Suez canal project and development of the surrounding are representing a major milestone for the economic development for the president of Egypt Sisi and his new government. It is based on leaving behind the former concept as merely a source of canal transit fees with outfocusing on the benefits of its strategic and geographical area position alongside the canal for these areas; urbanism, tourism, industry, trade economy and logistics.

The new Suez canal and its surrounding area represent an effective logistics and strategic base for the internal network and international by giving Egypt greater relevance internationally. This also will make more contribution to achieving military, political and economic advantages for the country⁶³

⁶² Al masry al youm journal, suez canal revenue up to 4.3 billion, article in 19/10/2017

⁶³ Ezzat Kenawy, the economic impact of the new suez canal, p.7

3.3 Panama canal

About:

The Panama canal is an important waterway connecting the Atlantic and Pacific oceans, cut through the narrow neck of land connecting the continents of north and south America. The Panama canal is 77 KM, the canal was constructed into two stages: the first between 1880 and 1893 the work was held by the french company De Lesspes, the second stage was by the United States of America in 1904 because in this time the U.S wanted to expand its shipping and naval power between oceans.⁶⁴

The canal opened officially in 15 august 1914, the canal was taken over by the panamian government in 1999, and is now under the control of Panama canal authority. In 2006 the panamanians people vote for the project and the work started in 2007, then the new Panama canal was officially opened 26 of june 2016.⁶⁵

The new Panama canal project.

The original canal, built at great human and financial cost, it simply too small to handle the bigger ships now playing the world trade routes, and small ships will continue to use the original locks, and the old canal with the new canal will share more of routes.⁶⁶ The project included the following:

- Deepening of the Pacific and Atlantic oceans entrance.
- Widening and deepening of the Gatun lake navigational channel.
- Building of the new set of locks and water-reutilization basins on the oceans.

The cost of the project is \$US 5.25 billion⁶⁷ and the most important canal expansion yearly tonnage is expected to increase 218 percent from 275 million tons to 600 million tons. The immense investment in the Panama canal expansion is not only greatly affecting the panamian economy in a positive way, but is also reverberating through the rest of the world.

⁶⁴ Fredric J. Haskin, The panama canal, pp 2-11

⁶⁵ Panama canal authority (canal history)

⁶⁶ Mimi Whitefiled, Miami Herald media artical, panama canal ushers in new era of international trade and megaships

⁶⁷ Panama canal authority, statement of costs of investment in progress, 2013 p.6

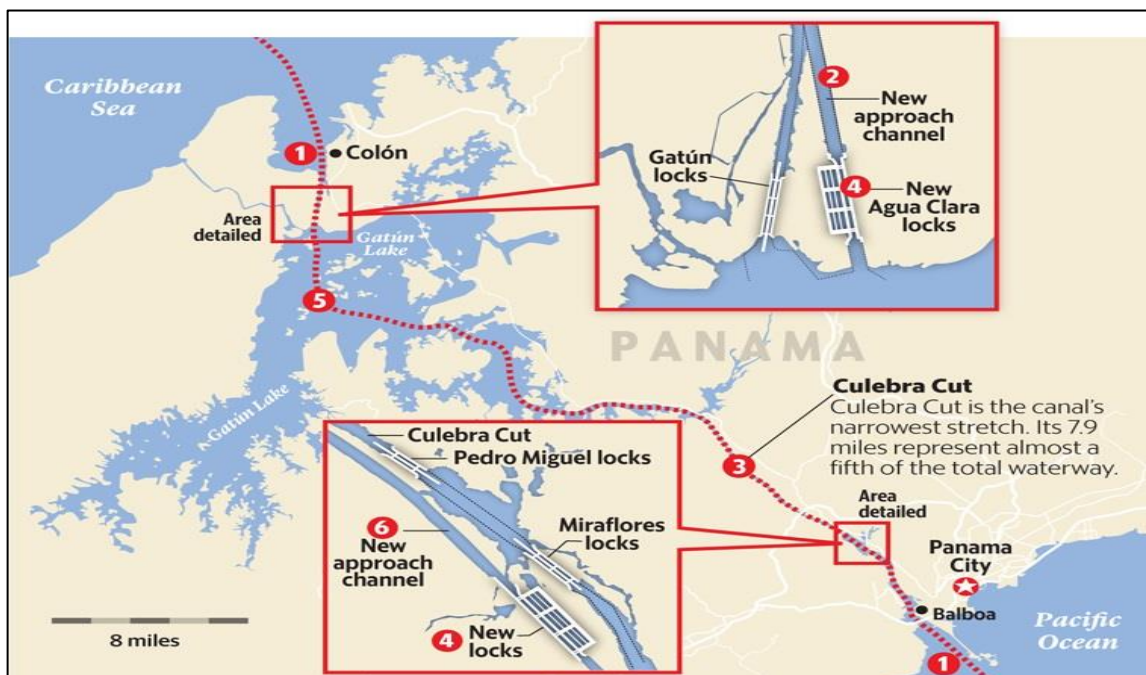
The objective of the project:

The main objective of the expansion program is to increase capacity to meet the demand growth with enhanced customer services. Also the traffic time will be reduced of the ships using the Panama canal.

The expansion will double the canal capacity, having the direct impact on economies and international trade, and will help the Panama canal competitiveness and the value of the maritime route through Panama. The opening of the canal last year has fundamentally changed the supplying of natural gas from the United State to Korea, Japan, and China. It also has enabled large, but not giant, container ships to transit and discharge at ports up and down the United States east coast. The Panama route enhances environmental contribution by reducing GHG emissions on the planet with more efficient transport.

How the new Panama canal work:

Figure 9. The new Panama canal.



Source; panama canal authority

Each lock chamber will have three water saving basins, which will reduce 60 percent of the water in each transit, there are total of nine basins for each of the two lock complex the gates have different dimension depending on their locations in the lock chamber raising also the maximum operation of Gatun lake from 26.7 to 27.1 meters in order to the canal's water

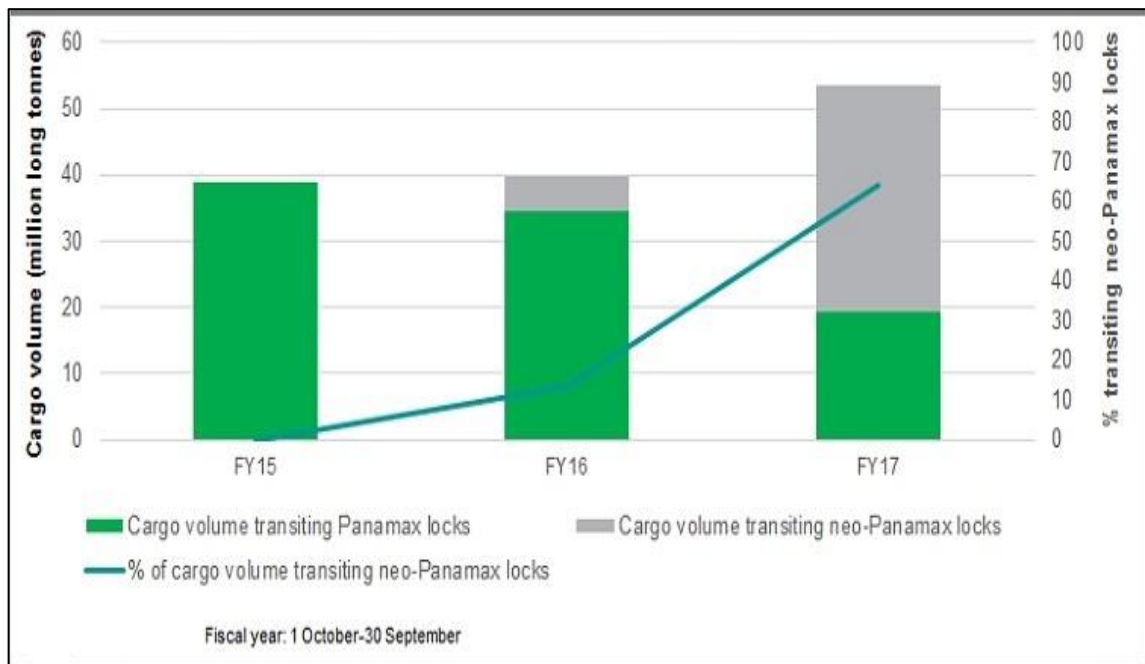
supply. The project will enable additional water storage capacity to Gatun lake by nearly 200 million cubic meters, which will increase additional transit to about 1,100 every year.

How this project impact to Panama economy and shipping industry:

The old canal was accounted about 15 percent of Panama GDP, so doubling its capacity makes the country economic bright and increased daily transits, faster transit times and allowances of more tonnage would also make way for increasing toll revenue given its level of cost effectiveness. International shippers and trader would be satisfy by choosing the Panama canal instead multimodel route like Cape Horn route.⁶⁸

The most anticipated result from the expansion project will make it economically attractive to move some of the traffic from East Asia to the United States.

Figure 10. Panama canal container cargo volume by locks. Fy 15-17



Source; Panama canal Authority

With an estimated annual growth of container cargo commerce of 8.4 percent, and increased number of vassel number to 51 by day until 2020, the Panama canal expansion and its augmented demand for the trade route, would inevitably contribute to the increased economic activity and will have a meaningful on shipping with countries in central america and the

⁶⁸ The Economist, Artical, What the expansion of panama waterway means to worldwide,.

caribbean as large ships that can transit the canal can also dock in ports that the giant ship cannot.⁶⁹

The new Panama channel will have a positive effect on Panama and on the world trade, its a bet on the future like the Suez canal because the amount of investment is high for the economy of panama and how know maybe the project can have extra benefits in long term as we can see there is more neo panamax volume in 2017 is increased according to the Panama Authority

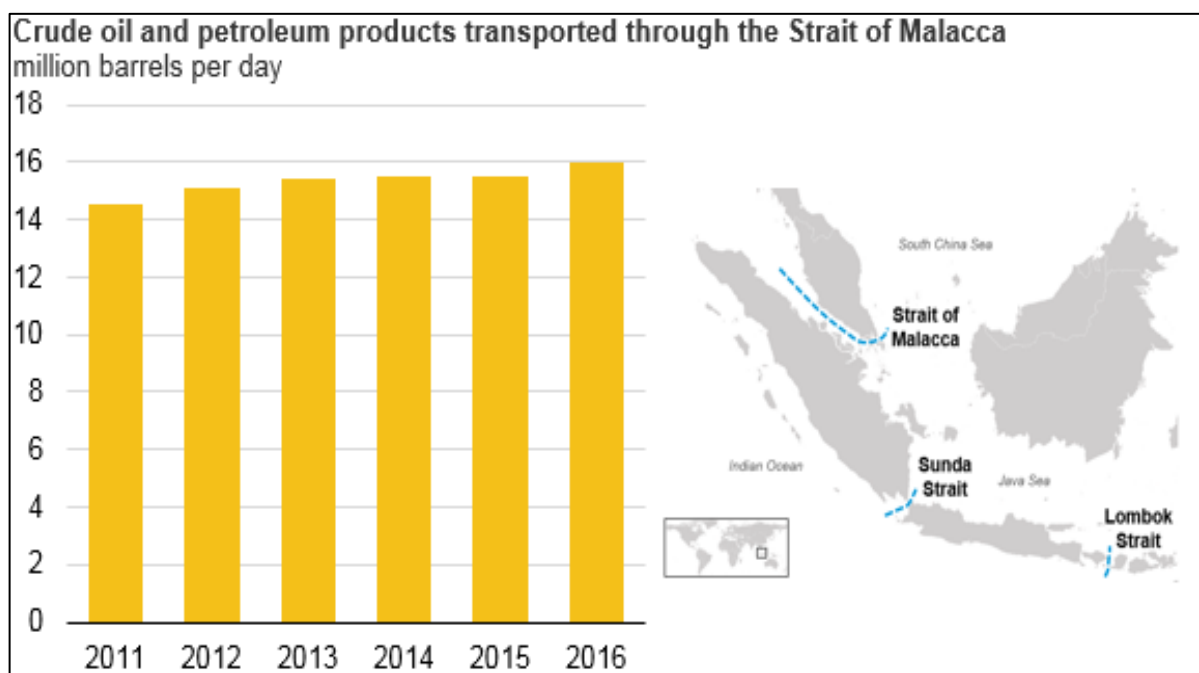
⁶⁹ Apics magazine Artical, impacts of the panama canal expansion on global supply chain

3.4 The Malaaca strait

About:

since the 17th century different major regional managed the strait like British and Dutch empires and China during different historical period. Strait of Malacca is one of the most important shipping waterway in the world from both an economic and strategic prespective, it is the shortest shipping channel between the indian and pacific oceans linking major economies such as Middel East, China, Japan etc.⁷⁰ the strait is narrow 890 KM between the Malay peninsula and the indonesian island of Sumatra.⁷¹

Figure 11. Growth crude oil transit in the straits of Malacca.



Source; U.S energy information administration 2017 oil transit chockeypoints

In 2016 more than 80,000 ships passed through the strait⁷². nearly one-third of the 61 percent of the total global petroleum and other liquids production that moved on maritime routes in 2015 transited the strait of Malacca. It is one of the important trade chockeypoint, the strait of Malacca increased for the fourth time in the past five years in 2016, reaching 16 milion barrels per day⁷³

⁷⁰ QU, Xiaboo, Meng, griffith universty, research the economic importance of straits of malacca and singapore

⁷¹ Wikipedia, strait of panama

⁷² Thailand business news, artical, Belt and road chines investment

⁷³ U.S information administration, strait of Malacca key oil trade chockeypoint

The issue of security:

The strait remain one of the busiest shipping lane of the world. The shipping route is highly vulnerable as a bottleneck of just 2.7 KM and have a littel room for ships to manoeuvre or gather speed.

Piracy in the strait of Malacca is a large and growing considerable interest from all major global powers whose economy depend on the use of the strait. Political instability and growing socioeconomic disparities provided an impetus for terrorist groups in southeast asia and these make effect on the economy of the region with The three littoral states Singapore, Malaysia and Indonesia.⁷⁴

Malaysian Melake gateway project:

Is a premier mixed development project carried by the chinese company KAJ development Sdn bhd and energy giant Power China which will form a joint venture.

It were launched in 2014 by the prime minister of Malaysia and expected to open first stage of the project in 2018 and scheduled to complete by 2025, the project is a set of four artificial islands totaling 1,366 acres set in a strategic and idyllic area of straits of Malacca, Malaysia and located between the main hub of kuala lumpur and Singapore.

Issues about the strait:

The \$US14 billion harbour that is being developed in Malacaa aims to overcome Singapore as the largest port in the region. But some questions are raised about the need for additional capacity and whether China's desired participation has to do with good business or with its strategic interest in the strait because most of China trade go through it, and 80 to 90 percent of its energy needs. "There is the strategic element of the Malacca strait. It always starts with an economic presence, which can developed into a naval one, because China will be obliged to ensure the safe passage of its commercial ships," said Dr John Saravanamuttu of the Rajaratanm school of international studies.

With this project the Malaysian government hope to attract the bulk of 100.00 vessels, most of them are chinese that pass the Malacca strait annually. Some industry players concerned about the cannibalising of existing port along the strait, especially in the light of Singapre's own port expansion.⁷⁵

⁷⁴ Joys Dela Pena, Stanford university maritime crime in the strait of malacca

⁷⁵ <http://www.straitstimes.com/asia/se-asia/malacca-harbour-plan-raises-questions-about-chinas-strategic-aims>

3.5 Airfreight

Air transport industry is in a state of change that come both from technological developments and external challenges from the global business climate and is a major component of the express freight and courier markets. The industry faces many challenges including:

- High sensitivity to fuel prices, as proven in the crude oil price spike between 2007 and 2008.
- High sensitivity of demand regarding the global economic growth.
- The overall infrastructure, both air side and land side
- Dwell time in the airports and related air bill paperwork in a fast industry.

Air freight industry divided into two main groups:

- Passenger airlines whose operations include air cargo on local and international services.
- Dedicated cargo operators who use a combination of their own aircraft and buy space on local and international passenger airlines at a wholesale level.

The aircraft used for air cargo service depend on the type of service:

- Dedicated air cargo services use dedicated freighters, as do integrated express carrier. for example we can find aircraft has been removed from passenger services and converted to cargo services after having lived out their economically useful life like airplan.
- Scheduled airlines; typically scheduled airlines use passenger airlines belly capacity, through Emirates, Lufthansa, Malaysian airlines and others, and also airlines may use 'combis' which a mix of passengers and cargo
- Special operations: the widest variety of aircraft can be found in this category including the Boeing 777-fxs and Russian Antonov AN-255 Mriya which is the largest airplan operate in our days

The role of Air cargo in international trade:

Intercontinental Air cargo as mode of transport fills the need of time-sensitive deliveries over large distance where alternative like ships on transcontinental route thus slower⁷⁶, Air cargo is closely linked to international trade whose expansion has been fostered by the removal of physical restrictions and growth of commercial opportunities through improved communications and international contacts⁷⁷.

⁷⁶ The world Bank, research on freight transport for development tool kit: Air freight

⁷⁷ Peter S Morrel, moving boxes by air: the economic s of international Air cargo, p 9

It has benefited from free transfers of funds, stability of exchange rates and easier access to credit.

Moving perishable goods like flowers or electronic equipments from one side of the world to the other would not be possible without air transport, a lot of leaders e-commerce market relay on the express delivery services made possible by aviation.

in 2016 online retail sales only represented 7.6 percent of global sales and have prospect of growth in next years.

Maritime industry recognized for its long history and economic tradition but air transport is recognized for its newness and innovation, over 35 percent of the world trade by value and 1 percent of the world trade is moving by air that is equivalent to \$US 18.6 billion worth of goods every day.

According to the last two reports by the international air transport association (IATA) global shippers supply survey conducted in 2015 and 2017, showed that the number one selling point of air cargo transportation by shipper is speed.

Air cargo is the fastest mode of transport, as shown by the data, collected through cargo iQ: on average air cargo shipments take 134 hours to get from the shipper to consignee.⁷⁸

Benefits of airfreight:

there are more benefits for air freight like the following:

- **Faster delivery:** Airports worldwide can be reached in 1 or 2 days or in a few hours by airfreight, thus reducing the risk of damage or theft to the goods. Delivery to certain area in world by ships and overland may take weeks or monthes to arrive. Time sensitive or preishable goods, such as fruit or pharmaceuticals, often relay on the airfreight.
- **Better security:** Airfreight has a tighter control over its cargo. Thus has better security on the cargo
- **Less packaging:** Airfreight requires less packaging because faster delivery and better security. Less packaging may mean saving freight, and labour cost.
- **Lower insurance:** Airfreight is faster and has better security than overland and ocean freight, thus the insurance premium rate generally lower.

⁷⁸ The international air transport association (IATA) value of air cargo report 2017

Airfreight and E-commerce:

The airfreight industry has for many years searching to moving towards full digitization. The e-commerce is one of the largest driver within the industry and continues to play the same role in global shipping.

The increased use of internet and internet-based technology has forced many participants in air cargo business to redesign the relationship with their target audience as following:

- Disintermediation or cutting out the middle men (business customer directly interact with cargo online websites for shipment from bookings, tracking and bypassing traditional intermediaries such as airfreight forwarders)
- Re-intermediation and partnerships with new cyberspace entities
- Counter-mediation where a company sets up a new intermediary largely under its control for example Amazon Prime Air with Amazon with Amazon Air cargo operations started in 2017 and expected to grow to 40 B767-300 aircraft as well as drone-based deliveries.⁷⁹

Airfreight cargo challenge:

From 2010 and the airfreight showed little weak growth and continued in 2015 with a 1.9 percent increase in volumes, IATA estimated that volume growth increased in 2018 to 4 percent.

- The complexity of scheduling challenge in airfreight hubs⁸⁰.
- The diverse nature and requirements of goods transported by air create unique challenges for airlines, information and communication technology (ICT) can play an important role in addressing these challenges in more competitive markets, ICT in airfreight need to be standardized to make easy exchange of information between the participants.⁸¹
- Airfreight still the most expensive way to make transport, which is one reason why it is dependent on trade conditions.

Airfreight challenges will become more effective as more cargo come into service is consolidated into large units. It is more likely that surface containerisation can reduce freight's growth than the other way around.

⁷⁹ Patrik Burnson, article Air cargo transformation is taken off due to e-commerce. logistics management magazines

⁸⁰ Hans-Jorg Kreowaski, Dynamics in logistics, Third international conference, 2013, p. 236

⁸¹ Yingli Wang, Stephen Pettit, E-logistics 2016, p. 58

4.6 Emirates Skycargo Case

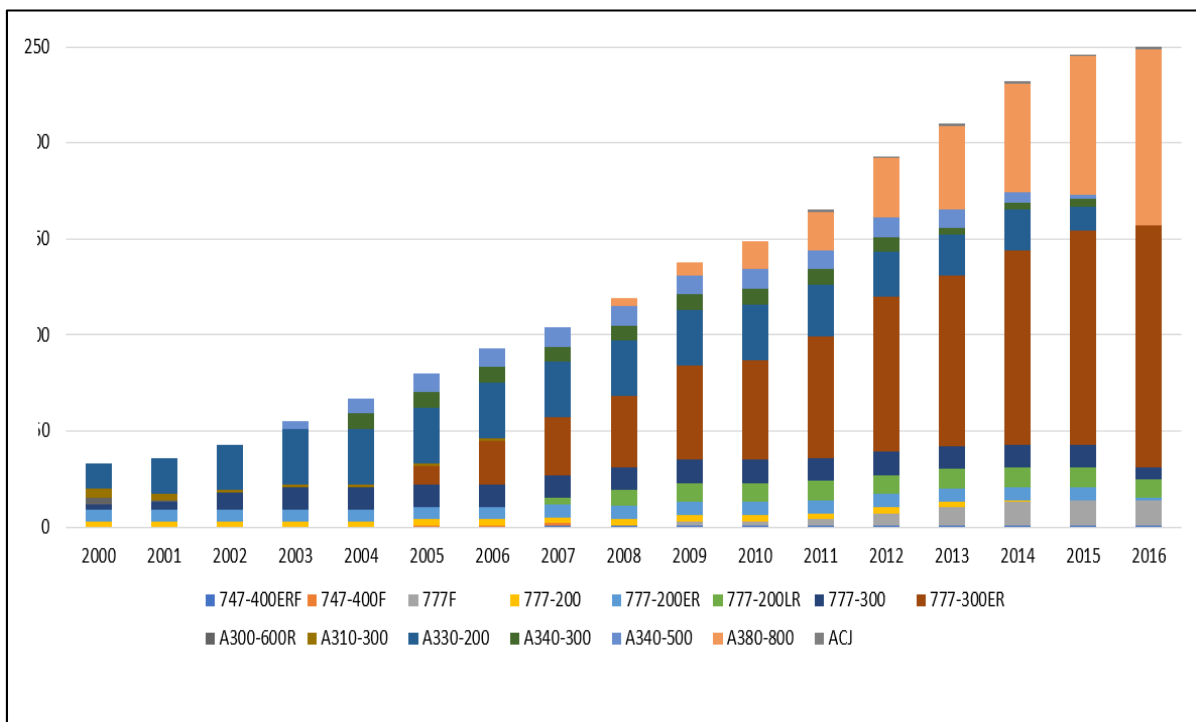
Is Middel East number 1 in freight operations

About:

Emirates is the world's largest international cargo airline measured in freight tonne kilometers flown (FTKMs). Based in United Arab Emirate, Dubai

Emirates skycargo is the air freight division of Emirates airline company, which started operation in 1985. It is the largest international airline cargo operate in the world. With a huge route network, they connect cargo customers to over 152 cities in 83 countries and operate in many of the world's fastest developing markets including 26 gateways in Africa, 19 in south Asia, 16 in Middel East, 24 in Far East, 7 in Austrlia, 41 in Europe and 21 in north and south america, Emirates skycargo account about 2000 employs around the world.⁸²

Figure 12. Emirates fleet by model.



source; AirInsight, Commercial Aviation Analysts.

In 2016 the Emirates joined cargo IQ, an IATA group of over 80 key global air cargo players that collaboratively create industry standards to optimise the efficiency of shipments throughout the entire air transport.

The cargo hold capacity comprises Emirates fleet:

255 aircraft, including 15 freighters (13 Boeing 777-fxs and two Boeing 747-400ERFs).

⁸² Emirates.com

Always in 2016 the company transported close to 400.000 tonnes of perishables, this include salmon from Norway, strawberris from California, flowers from Ecuador, wine and cheese from France.

In 2017 Emirates skycargo won the awarded for the Best Cargo Airlines in the Middel East, at the annual cargo airline of the year organised by Air cargo news in London for the 28 times in 31year of award history.⁸³

The Art of delivering freshness:

One of the most challenges faced by air cargo for the transport of perishable products and other temperture sensitive products is how to keep them at the right temperture while they are on the tarmac to be in loaded into the aircraft.

During past years the Emirates skycargo continued to strengthen its customer proposition and rise industry benchmark, and launched new dedicated freighter services. For example; the brand new ventilated cool dolly.

Extra perishables products solutions as a part of its new skyfresh product solution the cargo carrier said: “its skyfresh products brings together the cool chain infrastructure at its Dubai hub, its a wide-bodied aircraft including freighters, and a range of innovative cool chain solution.

It includes its new 16-tonne capacity ventilated cool dolly, which help to ensure that perishable mantain their freshness during the entire air transportation process.

Emirates skycargo in mega terminal in collaboration with Siemens logistics:

The new terminal total building ground area is 68.000 square meters, and capable to handel about 1.000.000 tonne per year

Nail Sultan, Emirates divisional Senior vice president, cargo, said “our partnership with Siemens is testimony to our commitment to create and deliver industry-leading aircargo solution”

Simens logistics and Airport solution has equipped the new cargo terminal at Al Maktoum International airport, Dubai world center, with a state-art-of-the art of material handling system (MHS), The new home of Emirates skycargo freighter fleet.

The new MHS housed in a single-leveled building has been designed to maximise the terminal operational performance, it includes the optimisation of cargo process including

⁸³<http://www.aircargonews.net/news/airline/single-view/news/everyones-a-winner-at-the-cargo-airline-of-the-year-awards-2017.html>

cycle time, a cargo tracking capability, direct build-up/breakdown handling, quick transit to and from airside as well as cargo screening.

The aircargo MHS has been divided into specific areas of cargo storage and handling. It consist of dedicated subsystems such as acceptance, bypass, staging and systems of transferring goods with only short term storage (cross-dock systems) for inbound as well as outbound flow. Build up and breakdown areas are equipped with fixed and flexible workstations.

A multilevel storage system has a capacity of more than 800 unit load device position. Bulk cargo can be stored in a very narrow aisle system in more than 3.000 position.

Direct cross dock lane are provided to ensure quick cargo transferrig from airside to landside and vice verse. Special cargo is proccesed and stored in a prishable area of over 16.000 square meters, This is a large air-conditioned area includes cold and freezer rooms as well as cooling units with various temperture zones.⁸⁴

Emirates SkyPharma:

in 2016 the company launched skypharma division. The carrier's include a wide range temperature controlled transport services for temperature pharmaceutical products offer customers three level to choose from- Emirates pharma, Emirates pharma plus and Emirates pharma active. These levels have been developed based on the temperature sensitivity of the product, the packaging solution used and the origin/destination of the shipment.

Emirates pharma has been well received by pharma customers across the world and this has resulted in a significant increase in the volumes of pharma carried by the company.

In september 2017 Emirates skycargo has received a revalidation of the European Union Good distribution practices (EU GDP) certification for pharma operations at its hub in Dubai.

Conclusion:

The Middel East is becoming an important component of the global air transport market. The fast growth of emirates is reshaping the competitive dynamics of the industry by cannibalizing the traditional traffic flow between Asian and European hubs, and by connecting secondary cities.

Emirates core competencies reveals three fundamental strategies that are responsible for its continued success.

First: the creation of a mega-hub at Dubai enable the carrier to collect traffic from six continents that it operates to and then ridistribute traffic over its hub.

⁸⁴ <http://www.siemens.com/press/PR2015040181COEN>

Second: its low cost structure enables it to offer a low fare which in turn triggers traffic.

Third: the company invest heavily in sponsor its brand and sponsorship.

3.7 Landfreight

Land logistics is an important link in the logistics activity. It extends the services of delivery for maritime and air transport from seaports and airports. One of the most important characteristics of land logistics is the high accessibility level in land areas.

There are two transport modes of land logistics the road freight transport and railway transport.

Land logistics has grow rapidly after the World War II becoming the dominant form of transport across the world.

Reliability, flexibility of the operations, and availability of door-to-door services have enabled road transport to gain an increasingly higher share in logistics market, in terms of freight traffic and passenger transport. With the improved of roads infrastructure in economies road transport is likely to continue its trend as most favored mode of logistics transport.

Information and commuincations technologies exerts an effect on road freight transportation through the development of e-commerce, e-logistics and e-fleet management. In general increases in freight transportation volume in tons and ton-kilometer are accompanied by increase in vechicle kilometer and urban vechicle kilometer, but private-sector efforts such as joint delivery and governments introductions of road prining may work to limit increase in vehical kilometers and in urban vehical kilometers.⁸⁵

Until now the land freight is not explored well in the economy. Also the regulations play an important role in the land freight from CO2 emissions laws become more and more restricted, the innovation of technology could help the industry. In recent years the trend of autonomus vehicals start to spread in th land freight but it is still in the first phases also because there is more issues not resolved yet for example in case of accident who will be the responsbile. So in the next years there will be a real challange for economy and governments to provide a rules and innovative technology for the sectors.

⁸⁵ International Assocation of Traffic and Safety sciences(IATSS) volume 29, 2005, page 20.

Chapter 4

4 Logistics Trends

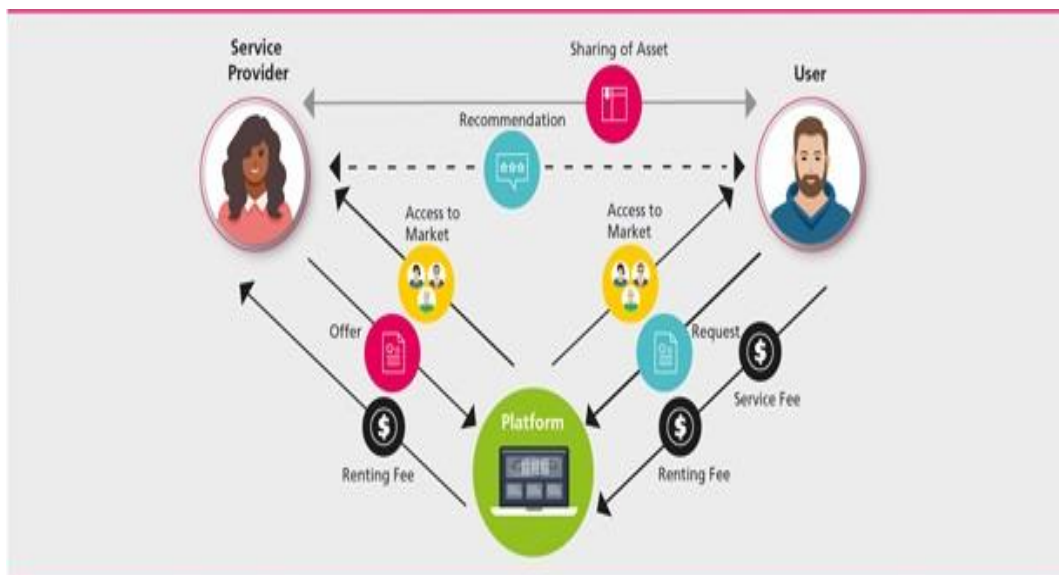
4.1 The trend of sharing economy logistics

In the last few years the strong power of digital sharing platform has started to change the rule of business in any industry. The trend has been enabled by smartphones, mobile technologies, machine learning, and “big data” technologies. This scenario imagine that the extent and effects of sharing economy are in the early stages.

In sharing economy people represent the hearth; meaning that people are active citizen and participants of their communities and the wider society. The participants of a sharing economy are individuals, communities, companies, organisations, and associations.⁸⁶

There is no control is sharing system. Between consumers and producers, there is no one with the function of controlling the transactions. Platforms are simple facilitators enabling peer-to-peer transactions. What make possible this transaction is trust.

Figure 13. sharing economy business model



source: Dhl sharing economy logistics, 2017

Sharing economy is an upcoming reality, linked to several meanings to describe economic and social activity involving online transactions or collaboration activity towards a common

⁸⁶ Juan F. Paz. Ambient intelligence-software and applications, (ISAmI,2017), p.56-58

goal. These processes are supported by community-based online services and are an upcoming reality with many success examples. Airbnb, Uber, BlaBla car. According to DHL research the revenue of sharing economy will increase from 15 billion in 2014 to 335 billion in 2025.

DHL trend research. The researcher highlights the critical issues still to be addressed for sharing economy like reliability, transparency, and job elimination, and then they illustrate the most famous practices from other sectors:

Hospitality (Airbnb), personal research, heavy industry (Rental and sharing of machine), transport and mobility (Uber).

The seven main sharing economy opportunities for logistics operator like:

- Truly shared warehouse: with this expression, researchers point to Airbnb like platforms- such as Flexe or DHL spaces which allow to rent for time and in dynamic mode (ie varying extensions according to the need) single area of shared department store, managing their use, even on smart phone through the new generation of inventory level management systems.
- Urban discreet warehousing: This is the “small” version, in urban areas, and consumers for the previous point. It is known that the cities are increasingly inhabited and the apartments smaller and smaller, so there is more need to spaces where depositing and storing objects. This explains the usefulness of digital platforms that allow small places to be rented and
- made available by private individuals, such as garage, bunk beds, and warehouse, also offer services such as picking, delivering and renting equipments.
- Community goods on demand: here they examine the growing success of rental platforms for small everyday use (bike, camping tent, appliances), highlighting the great opportunity for logistics services providers to offer on-demand collection and delivery networks, storage spaces, warehouse management, and packaging facilities.
- Logistics asset sharing: The logistics operator with fleet of vehicles can leverage the sharing concept to improve the rate of use of these assets, which often remain unused. Through dedicated digital platforms developed (ad hoc) can rent the vehicles to individuals or companies, providing complementary services such as insurance services. Researcher also suggest a similar approach to warehouse handling equipments (forklift, pallet trucks), if they not use 24 hours

- **Transport capacity sharing:** In this part of the report they make reference to the study made by Frost & Sullivan that one from four trucks in the U.S and Europe travel empty, and the rest are traveling at an average of 50%. In addition, there are inefficiencies related to traffic, loading and unloading times, and incomplete communications and other factors.
- Several startups have entered this field with digital brokerage platforms are mentioned Slood and Convoy which favor the exchange of data and information between logistic operators and buyers, and thus the encounter between transport demand and cargo availability on the means. Similar platforms will appear in air and train transports.
- **On-demand staffing:** Logistics is partly covering automation with heavier and repetable activities. But remain a sector with high-intensity industry, and often with seasonal demand peaks. to deal with them can be great help digital platforms for meeting demand and job supply with recruiting and bureaucracy management services for temporary work contracts. Like the chinaese Jopdoh start up.
- **Logistics data sharing:** These sharing platforms collect a lot of data. Data that can be analyzed in the right shapes to get directions for new services, new products, and ways to make cities more efficient and enviromentally sustainable. The example of the City Data Exchange in Copenhagen, a platform based on Hitachi technologies and powered by data provider by various sources, including logistics operators, whose analysis will danish capital to manage traffic and infrastruecter in mode to become “carbon netural” city 2025.⁸⁷

there are substantial and significant interactions between enviromental dyanmics, socio-economic framework and logistics activities. Many studies show that one third of pollution is developed by residential activity; another third is produced by production and industrial system; on third of the enviromental pollution is generated by transports and logistics activity.

Sharing economy, consist in the transformational of the ownership of an asset in the access to a particular service. It is a new framework, supported by new technologies. However still in the initial state and will require more time and a lot of investments to become diffused experiences suitable to change the relationship between the needs of mobility and collective behaviour in our economies.

⁸⁷ DHL, sharing economy logistics research, Rethinking logistics with access over ownership, 2017

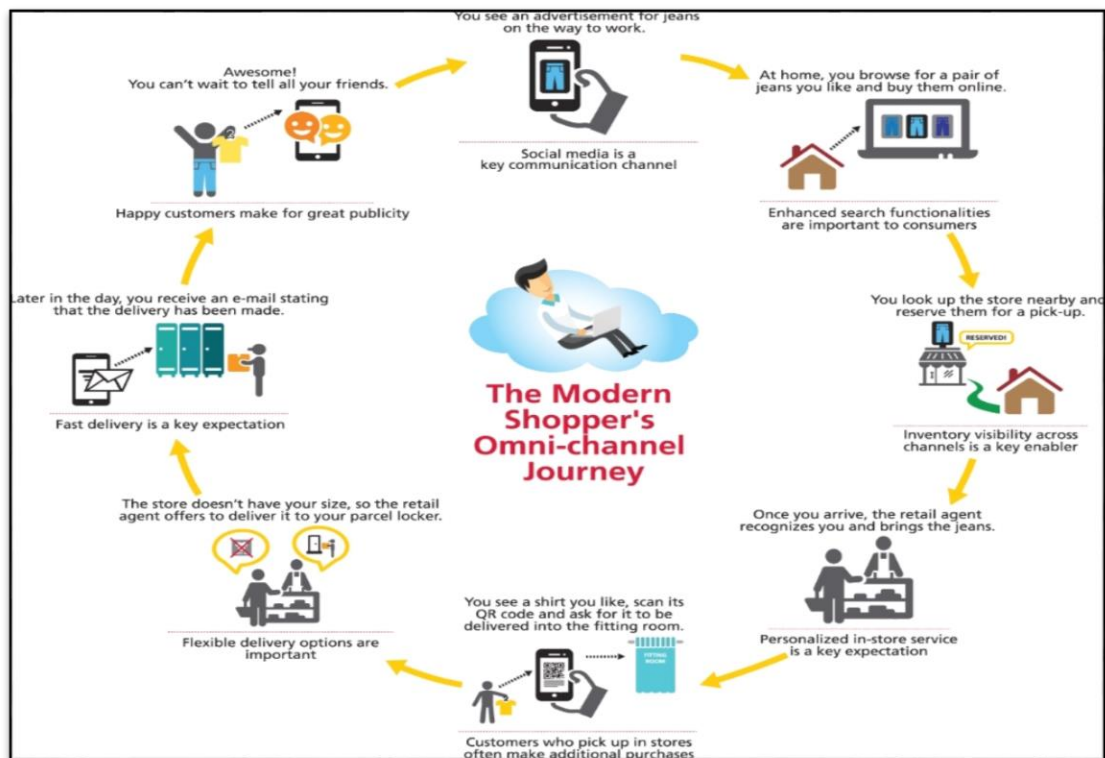
4.2 Omni-channel logistics

“In adequate infrastructure and accelerating demand for last minute home delivery will tax a system that was not designed for E-commerce” (2017 state of logistics report, CSCMP)

Omni-channel logistics is the next generation. The growing adoption of internet and mobile technology made drastic change to consumer buying behavior, and the rise of e-commerce has transformed the way consumers interact with retail business. With consumers placing heavy emphasis on shipping in retail decision-making, it's critical to retailers to explore new ways to leverage logistics strategy as a driver of omni-channel success.

The omni-channel is an initiative by brick and mortar retailers to better integrate their stores and e-commerce channels.

Figure 14. Modern shopper's omni-channel.



source Dhl omni-channel logistics,2015

omni-channel retailer:

Becoming an omni channel retailer means resuming the shift in consumer behavior in this years; consumer increasingly expect to discover, search, buy, pick up, and return seamless elements from many physical and digital access points. Taking advantages from this shift requires several specific cross-channels activities built around an understanding of how best

to leverage customers purchasing journey as they travel between online and offline shopping space.⁸⁸ however, it is not enough to change store or products service offering: guiding a successful omni channel operation require a powerful engine: a sophisticated set of logistics that reach all parts in the organization.

According to DHL report there is a growing trend for omni channel approach which all sales channel converge into a single seamless channel of orchestrate product flow. Also the report forecast that Within the next 3 years. Most of the world's population (90 percent) will have fast mobile internet connection, and in now days alot of people browsing and buying in the internet. Already 70 to 80 percent of consumers in the U.S. use multiple channel before making purchase decision.⁸⁹

⁸⁸ Oliver Wyman.com, omnichannel logistics, p.3

⁸⁹ DHL omni-channel logistics report 2016

4.3 Internet of things

Definition:

The term internet of things was first coined by Kevin Ashton in his presentation made to Procter & Gamble (P&G) 1999. But it considered come with Bill Gates vision in 1977 of “a computer on every desk and every home”

Internet of things (IOTs) and data analytics are the most significant emerging technologies in last years, that have transformational effect on every industry in the world. The internet of things is a technology that digitizing the physical world and important driver to the fourth industrial revolution that will have impact on businesses and industries in all’over the world. The internet of things ecosystem: all the components that enable businesses, governments, and consumer to connect to their IOT devices, including remotes, dashboards, networks, gateways, analytics, data storage, and security.

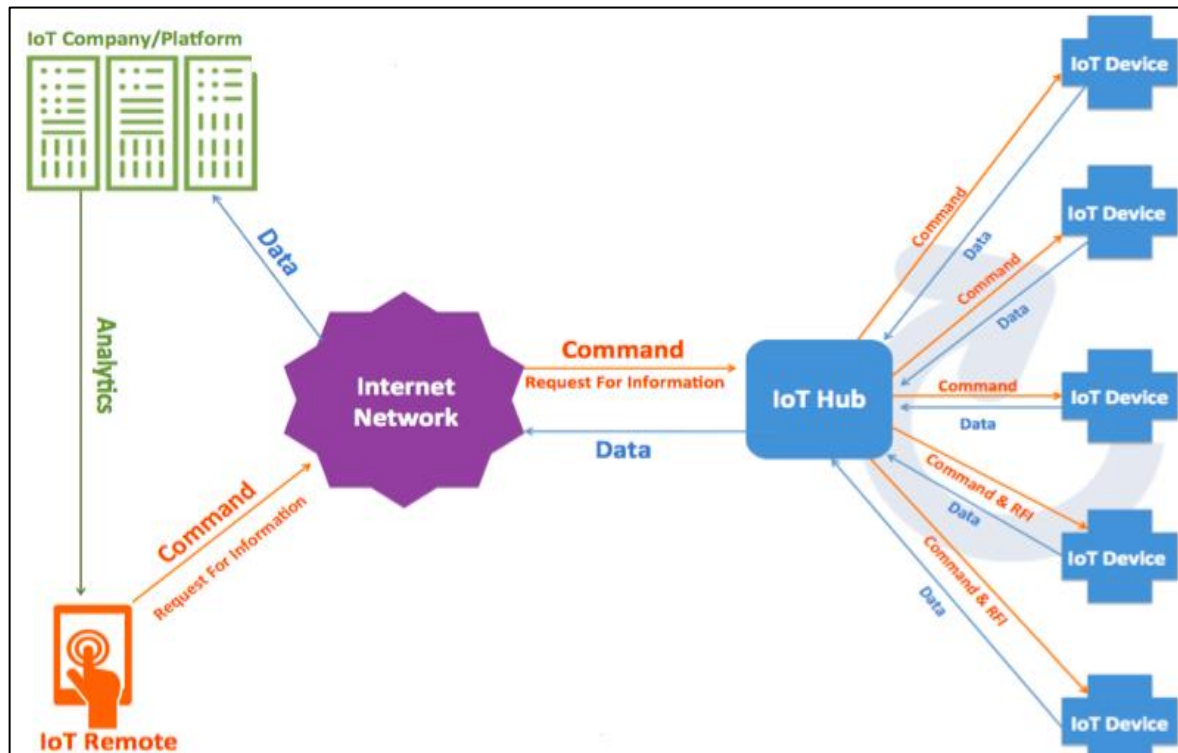
Characteristics of (IOT):

- **Interconnectivity:** We refer to the Internet of things, anything able to be interconnected with the global communication and information infrastructure.
- **Things-related services:** The internet of things is able to providing thing-related services within the constraints of things, for example privacy protection.
- **Heterogeneity:** In the internet of things all devices are heterogeneous as based on different network and hardware platforms.
- **Dynamic changes:** The state of devices change dynamically, for example waking up and sleeping, disconnected and connected, also in devices including location and speed. Moreover the number of devices would change dyanmically.
- **Enormus scale:** In internet of things The number of devices which need to be managed and communicate with each other will be magnitude larger than the current devices connected to internet today. The ratio of communication triggered by devices as compared to communication triggered by human will change toward device-triggered communication.⁹⁰

Internet of things is a concept and not just a single technology, this concept where new things are connected and enabled.

⁹⁰ Ovidiu Vermesan, Peter friess. Internet of things-from research and innovation to market deployment,2013, p.12-13

Figure 15. internet of things Ecosystem



Source: Business insider's premium research services

Internet of things:

Recent many commercial applications like wearables and cell phones offer tracking on personalized data such as heart rate and calories burned that result in improving one's fitness and health has successfully adopted internet of things.⁹¹ as IOT continue to evolving the concept of smart homes, smart cities, and connected cars and machines would flourish.

Analyst Gartner says that by the end of 2017, there will be 8.5 billion internet of things devices up to 35 percent from 2016, compared with 7.5 billion people. Connected car and the market of for self-driving vehicles are the forefront of the internet of things revolution. And predict to found in 2020 about 250 million connected vehicles on the road. Total spending on the endpoints and services will reach almost \$US 2 trillion.

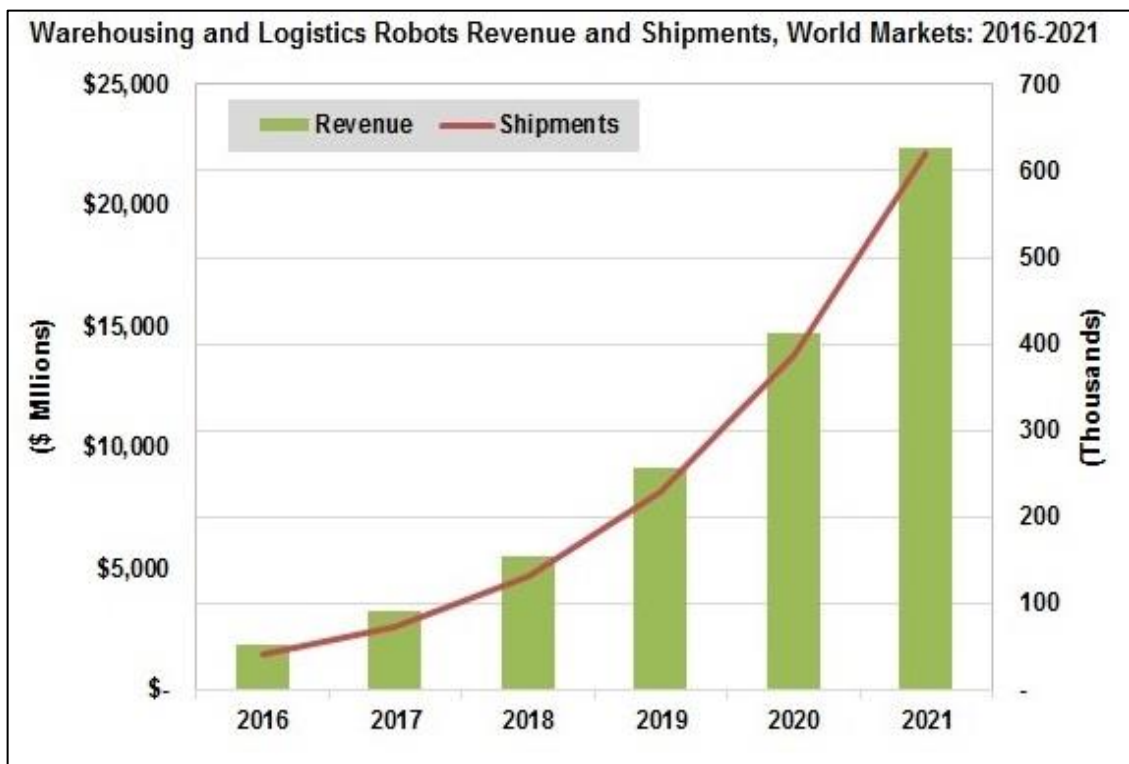
⁹¹ Hwaiyu Geng, internet of things data analytics handbook, 2017, p.4-6

4.4 Robotics in logistics

The impact of robotics has already been visible for along time, for example in warehouses and distribution centers (automatic storage and retrieval systems), but also in automotive assembly line. As manufacturing has gone global in last decade.

Logistics robot are automated machine that improve the efficiency in logistics operations, and self-directing floating devices enabling the transportation of merchandises or assets in appositely designed logistic network.

Figure 16. The growth in robotics industry



source: Tractica

Tractica consulting forecasts that worldwide warehousing and logistic robot unit shipments will increase from 40.000 unit in 2016 to 620.000 units annually by 2021. The market firm estimates that gloabl market revenue for the sector reached \$US 1.9 billion in 2016 and anticipate that market growing fast over next years, reaching market value of \$US 22.4 billion by the end of 2021.⁹²

⁹² <https://www.tractica.com/newsroom/press-releases/warehousing-and-logistics-robot-shipments-will-reach-620000-units-annually-by-2021/>

4.5 Morello S.r.l case.

The company Morello operate since 1964, Based in Turin, Italy, has been involved to solving problems related to transportation handling of materials inside any type of industry.

This company since the end of 20st century has been studying and diffusing in Italy and in the world the most advanced technologies for material handling operations. It has acquired and enforced in his manufacture the best ideas springing from this technological environment through the will and interest of its engineers and workers specialized in electronics, mechanics hydraulics and pneumatics.

The real goal of this company is that together the standard solution they can offer specially conceived to solve specific and complex handling needs. To this aim, Morello company is equipped with the most up to date technology system.

Morello designs and manufactures a wide range of battery motorized trolleys, diesel self propelled trailers, transfer carts, die carts, industrial trailers, titters and lifting platforms for metallurgy, oil & gas, shipyards, automotive and aerospace. power generation, paper mills, metalworking and many others.⁹³

Figure 17. Morello Material handling technology application in transporting Metal



source: Morello company.

⁹³[http://www. Morellogiovanni.it](http://www.Morellogiovanni.it)

The products for material handling help industry to manage logistics inside the company in a better and more efficient way, automation make the real difference, trolleys have a lot of benefit and special features, for example they minimize cranes usage, thanks to the lifting deck which allows to these multidirectional trolleys to lift and move the load where needed. This machine is extremely silent, completely non-polluting and requires very few maintenance as steering and traction are entirely electric.

Figure 18. Morello AGV technology



Source; Morello Company

The revolution of material handling is the automation, the AGV trolley, designed and made by the company and is a remoted controlled at self-acting translation at inertial control. Automatic trailers increasingly being used in every manufacturing sector.

concolusion

The company has expanded in many countries around the world its applications, and it is injecting more investments in the material handling technology with expectation to more and more growth in next years. The Middel East market has become one of the most important markets for the company for material handling technology and there are alot of opportunity alllover the world, even in oil platforms..

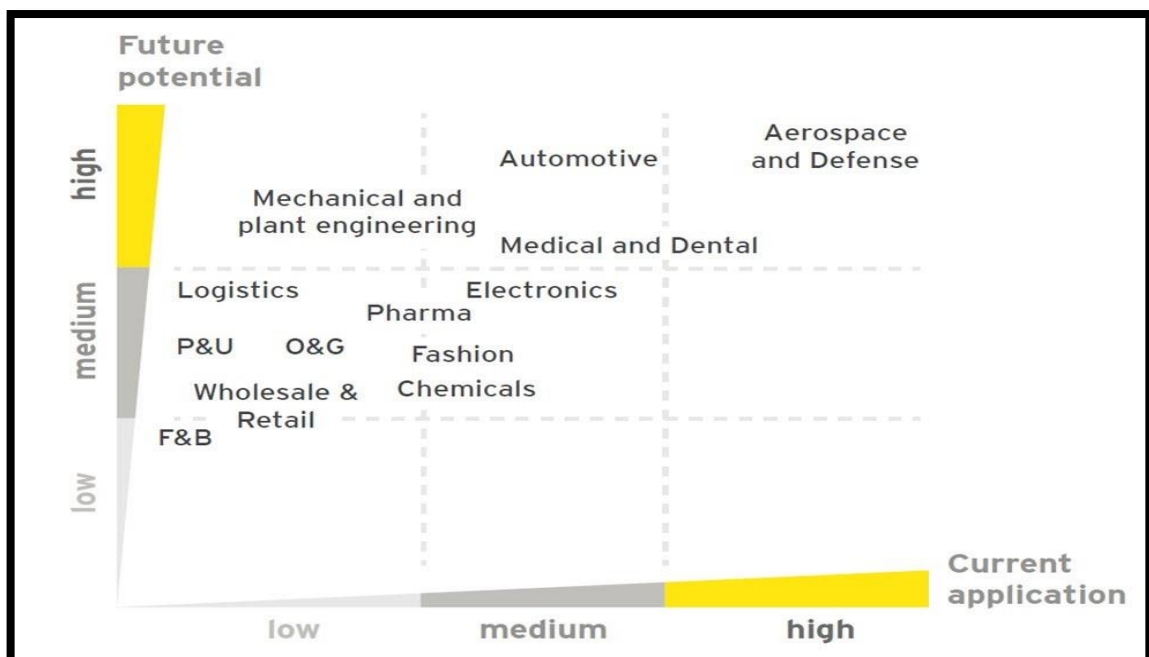
4.5 3D Printing Trend

3D printing know also as “additive manufacturing”. A new era for manufacturing the products and there is alot of interest shown, but the applictions of 3D printing need more revolutions in future.

3D printing has a direct impact on supply chain. On-demand manufacturing opportunity and the faster production of customized products that 3D printing offer can reduce Lead time, warehouse costs, and inventory waste and others, while improving the quality of the products. Although manufacturing in some areas can be low-cost, operating a global logistics network, including transportation and other expenses, this means a huge overhead costs. 3D printing can reduce these overhead costs by permitting business to station local manufacturing centers near to strategic markets, and this reducing the lenght of complexity of supply chain and simultaneously reducing carbon footprint.

The major applications 3D printing include new project prototyping, highly complex customized products, and small runs of high-value replacement parts.⁹⁴

Figure 19. present and future of 3D printing



Source: Ernst & Young global limited. Analysis based on 2016 global 3D printing survey

3D printing is seem to substitute traditional manufacturing in the industry segements that produce highly complex and customized products, in fact in these past few years the use of

⁹⁴ Antony M. pagano, Mellisa Gyimah, Contemporary issues in supply chain management, 2017, chapter two

3D printing is applied in many sectors such as, automotive, aviation, and medical health application. Looking for the future the 3D printing will undoubtedly be a game changer in many industry segments, improving products quality and will be easy to create in some cases new products.

4.6 Augmented reality

Definition:

Augmented reality (AR) is the real-time use of information in the form of the text, graphic, audio and other virtual enhancements integrated with real-world objects. It is “real world” element that differentiates AR from the reality. AR integrates and adds value to the user’s interactions with the real world, versus a simulation.⁹⁵

Method of Augmentation:

One requirement that distinguishes Augmented reality displays from normal computer-generated displays is that virtual and real environments need to be combined. When the combination of virtual and real happens via a lens through which the user is viewing the environment, and this is described as a see-through display, and there are two ways to achieve these results: an optical see-through display or video-through display, if the augmentations are projected onto actual physical geometry this technology is described as spatial Augmented reality.⁹⁶

AR and Smart glasses sector:

Smart glasses, was one of the first markets to adopt and deploy Augmented reality. Logistics will account to 24 percent of smart glasses shipments in 2017, according to a new report ABI research logistics.⁹⁷ It is forecasted that shipment of logistics smart glasses will generate revenue of \$US 52.9 million in 2017 and will grow in 2022 to arrive to \$US 4.4 billion in 2022.

One of the companies that have expanded the use of Augmented Reality was the transportation company DHL, after some trials for the smart glasses branded “Vuzix”⁹⁸

⁹⁵ <https://www.gartner.com/it-glossary/augmented-reality-ar/>.

⁹⁶ Dieter Schmalstieg, Tobias Hollerer, Augmented reality, 2016, chapter 4.

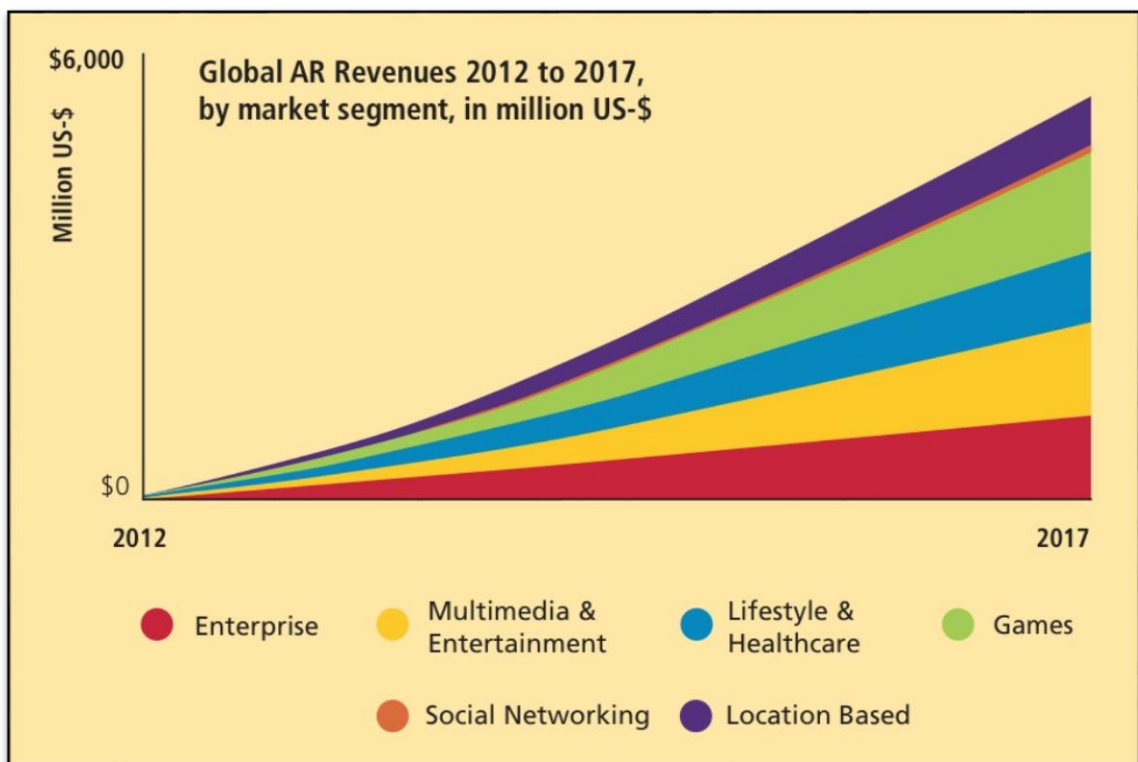
⁹⁷ <https://www.abiresearch.com/market-research/product/1027039-augmented-reality-in-warehousing-and-logis/>.

⁹⁸ <https://www.vuzix.com/>

leading developer of smart glasses and video eyewear in some country the company decided to expand its use in its warehouse workers.

The smart glasses provide visual displays of order picking instructions along with the informations on where items are located and where they need to be placed on a cart, freeing pickers hands of paper instructions and allowing them to work efficiently and comfortable way. The international trails have shown an average of improvement of productivity by 15 percent and higher accuracy rate.DHL now established the Vision Picking solution for the long-run. This example show how AR will be an important global trend in next years.

Figure20. global AR revenues 2012-2017



Source: xcubelab

The Augmented Reality is transforming manufacturing and logistics in three ways:

- First on-the-spot of training for tomorrow's workforce. Augmented Reality applications will be highly valuable for skilled talent in manufacturing hub training. Technology can encourage significant productivity improvements by shortening the learning curve for on-site staff. The technology can be expanded into other skilled trades. AR training tools will help in future-proofing workforce the global workforce.

- Second streamlining logistics operation: Emerging computer vision and machine learning solutions can identify where is located a product and if it is the correct product faster than human.
- Third Optimization of transport: wearable devices can project information about the type of product being transported, the weight of the package or if fragile or not. The device then can be able to calculate the space required for the package and search for a spot in the driver vehicles, and also taking into account the planned route.⁹⁹

The Augment Reality in future seem to have a lot of chances to be spread in logistics industries in rapid way with the increase of innovation and technology.

4.7 Industry 4.0

Industry 4.0 “in its scale, scope and complexity will be a transformational unlike anything humankind has experienced” said Professor Klaus Schwab, author of *The Fourth Revolution*, also founder and executive chairman of the World Economic Forum.

Industry 4.0 is the new horizon of production and distribution which becomes more smart, faster, and more efficient, thanks to a technological mix of automation, information, connection and programming, that are leading to a change of technological paradigms.

Involving the manufacturing system in all its forms. For the first time the term industry 4.0 was used like word 2011 Hannover fair. The industry 4.0 is including technological mix of robotics, sensors connection and programming and represent a new revolution to manufacturing products and organizing the operational activity thanks to more automated and connected production models.

The global economy growth declined from more than 60 years;¹⁰⁰ and if this continues it will be no growth in the next decade this can be ended with industry 4.0.

Growth matters a lot if we look at the history of economy growth, by big manufacturing revolutions. It happened three times, every 50-60 years.

- Industry 1.0 The steam engine in the middle of the 19th century.
- Industry 2.0 The mass-production model in the beginning of the 20th century.
- Industry 3.0 The first automation wave in the 1970s.

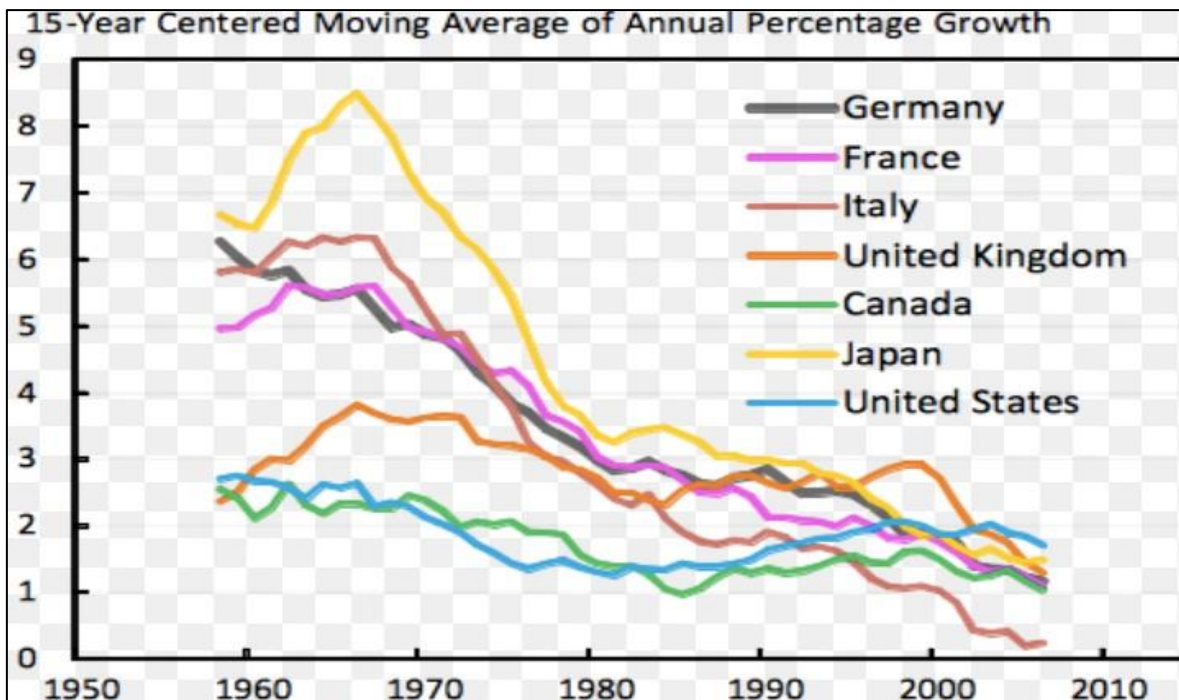
These revolutions happened because they have injected huge productivity improvements. In order to grow, we have to produce more, putting more into our economy, this means either more

⁹⁹ Jon Peddie, *Augmented Reality, Where we will live*, 2017, p 100-103

¹⁰⁰ <https://www.weforum.org/agenda/2015/02/what-are-the-key-factors-affecting-us-middle-class-incomes/>

labor or more capital or more productivity where always is the growth lever, and the result will be efficient logistics world and with attention to the enviroment.

Figure 21. Decline in growth productivity



Source: Conference Board, Total Economy Database, Council of Economic Advisers calculations.

And now we have enter in the fourth revolution, where the the computer and automation will work together in entirely

new way. In the last five years automation and technology have completes tasks that used to require a salaried employee. In the long term, the employment market can change to be better market, but in the short term there will be few position available.

The challange will be in finding the right balance between Human and technological resources. The world independence on innovation and technology in next years will increase in fast way.

5 Conclusion

If there are no barriers, trade growth and logistics become more and more efficient. In a period in which four big technological changes are innovating the way to do business: for the companies the biggest obstacle to overcome is not geographical but regulatory (duties, rules, taxes). The impact of technological change, however, is revolutionary: process digitalization, the internet of things, self-driven vehicles, and deliveries done by the drones. There is a further change, even if it is less used till now, it is the 3D printing. These technologies, in any case, are transforming the way in which the big of logistics works. Inside logistics, the more important impact is the one given by process digitalization, automation, robotics, and the possibility to use transport chain with economy of scale and efficiency absolutely impressive. The skies are now covered by two different types of commercial aircrafts: thousands of daytime airplanes (with a small storage space for the goods) and at night hundreds and hundreds of cargo airplanes used for pure logistics. The opening of the skies is the last challenge for example for Amazon: the e-commerce giant is in fact a sophisticated integrated logistics system that sees in the hubs and sorting centers the physical equivalent of its datacenter where the cloud was born. Ensuring fast connections along the air ridge is like for optical fiber backbones connecting data centers between them and “competition”, half-competition and half-co-operation with big integrate traditional logistics.

The goal of the big of logistics today and forever remains the business: the more companies can freely send and receive parcels and letters, rather than being crushed by customs duties and barriers, the better it is. Innovation is all about this. “the balance of e-commerce between companies-companies and private companies – says Ups international president Jim Barber- is the split between B2B to 55 percent and B2C at 45 percent, with unbalanced US percentage in favor of B2C commerce not in Europe”

Growth in the B2B sector is significant (big investments done by countries for example Egypt in Suez canal, and Panama in the Panama canal, for example), but with a significant difference over the B2C market: most trade is local, national or geographic. While the B2C market is wider across the planet.

Here comes the possible innovation. For more business customers this means additional services, going, from extensive stock management to 3D printing services on demand. For others, it is about offering more sophisticated services such as drones to try to shorten goods shifts.

Logistics, the physical connective tissue that allows the digital economy to flow without problems is like a match between engineers. Each iteration brings an improvement, an innovation. Depending on the person we are talking about within the system, the concept of innovation changes. For the manager of a sorting center, the automatic routing system, the barcode readers, the storage and the storage mechanisms of shipping packages are a mechanism that can fail from one moment to the next. Drones are about to enter first inside the large closed spaces of logistics centers because they can operate quickly and in a controlled way. Instead, the innovation everyone is expecting in a short time is the intelligent vehicle. Vehicles where the driver remains on board but has the hands free while the vehicle proceeds on the scheduled route and so the human can work on something like parcel organization or bureaucracy management. this will further optimize your routes, increase efficiency, enable better planning, and thus savings and earnings.

References

1. Dr. Martin Christopher; 2016, logistics & supply chain management, FT publishing,.5th edition, page.1-10
2. Beth f. Scott, lieutenant colonel James C. Rainy; 2000, The logistics of war; air force journal of logistics 2000, page 70-80.
3. <http://www.lean.org/whatslean/history.cfm>, Lean enterprise institute; A brief history of lean.
4. Takahiro fujimoto; 1999, the evolution of a manufacturing system at Toyota, New York Oxford University Press, page.5-9
- Ballou Ronald H, 2006; The evolution and future of logistics and supply chain management production, vol. 16 p 370.390
5. Kee-hung Lai, T.c.e Chang; 2009, just-in-time logistics, Routledge London and New York, 1st edition, page 34.
6. https://en.wikipedia.org/wiki/Material_requirements_planning
7. Reshma Mohan, Article. 9/05/2017, Third party logistics: the future is here <http://ezine.artical24.com/future-logistics-iaia-1.2w/0>
8. Ballou R. H, 2004, Business logistics/supply chain management: planning and controlling the supply chain 5th edition pp 75-80
9. Christopher, M.G, 1998, Logistics and supply chain management, strategies for reducing costs and improving services, FT publishing, 2nd edition, p 294- 300
10. http://www.cscmp.org/Educate/SCM_Definitions_and_Glossary_of_terms/CSCMP/Educate/SCM_Definitions_and_glossary-of-terms.asp?hkey=60879588-f65f-4ab5-8c4b-6878815ef921
11. Lambert, D., & Cooper, M., 2000. Issues in supply chain management. The international Journal of logistics management.
12. Porter Micheal E., 1995, On competition, Publishing corporation, chapter 3
13. Martin Christopher, 2005, Logistics and supply chain management, 3rd edition, FT publishing, p. 14
14. Martin Huber, 2001, Implications of digitizing Miniaturization and convergence in media and entertainment, center for digital technology and management, p.74
15. Frazelle Edward H., 2001, Supply chain strategy, Mac Grow Hill, pp.38-67 and pp 172-173
16. Water Donald, 2003, Logistics/ an introduction to supply chain management, Palgrave Macmillan, p.13-40
17. Harrison, Alan, Remko I. van Hoek, 2008, logistics management and strategy, FT publishing, 3rd edition, 2008, p.6.10
18. Lai, K.H, 2004, Services capability and performance of logistics services providers, Springer, p. 385-399
19. Coyle John J., John C., Novack Robert.,2012, Supply chain management, South-Western College pub, 9th edition. P. 109-123
20. Lun Y.V, Lai K.H, Cheng T.C, 2010, Shipping and logistics management, Springer, pp 124-126
21. Shahraki, Alireza, YAZDANPOUR, Mahdi, 3/2/2015 article, LSP, 3PL, LLY, 4PL. Which one come in useful for outsourcing cycle. <http://ieee.org/documents/lsp-3pl.pdf>
22. council of supply chain management (CSCM,2016) Glossary of terms.org
23. International conference on management and information technology, Yichang.china, 2013 pp 190-193
24. Myerson Paul A., 2015, supply chain and logistics management made easy, Pearson Education inc., p 194
25. LI Ling, 2007, supply chain management, World Scientific Publishing Co., p 105
26. Bumstead Jon; Cannons Kempton., 2002, vol.4, trade publication, article From 4PL to manage supply chain operations

27. Rushton Alan, Walker Steve, 2007. International logistics supply chain outsourcing, from local global, The Chartered Institute of Logistics and Transport, p.265
28. Nanopoulos Alexander, 2014, S-BPM ONE, LNBIP 170, p.3-19. Springer publish.
29. Cengiz Kahraman, Sezi Onar, 2015, Intelligent techniques in engineering management, Theory and Application, Springer publish, p 328
30. Hicksons A, Wirth B, Supply chain intermediaries study, Manitoba University, p.13
31. Third-party logistics study, 21st annual report 2017. <http://www.3plstudy.com>
32. <https://www.capgemini.com/news/2017-global-state-of-logistics-outsourcing-study-reveals-evolving-role-of-shippers-and/>
33. Farahani Reza, Shabnam Rezapour., 2011, Logistics operation and management, Elsevier publish. London and USA, p 81
34. Kotzab Herbert, 2005, Retailing in scm-perspective, Copenhagen Business school Press, p.76
35. Vanhoose David, 2011, E-commerce Economics, Routledge publish, second edition, p. 9
36. Slope Vinod V., 2007, Logistics Management, pearson Education, p.158
37. Zheng Qin, 2010, Introduction to E-commerce, Springer publish, p. 9
38. Theodore Stank, Thomas Goldsby, 05/2007 Global transportation management trend, <http://www.industryweek.com/regulations/global-transportation-management-trends>
39. Philip Robinson. 2014, Ernst & young report, Managing indirect taxes in the supply chain, pp 8-30
40. Steve Culp. 15/2/2013 article, Supply chain disruption a major threat to business, Forbes media
41. Liang Peng, Turban Deborah, 2018,, electronic commerce. Managerial and social network, Springer, 8th edition p. 104
42. Amazon annual report, investor relation. http://phx.corporate-ir.net/phoenix.zhtml?c=97664&p=irol-sec&control_selectgroup=Annual%20Filings.
43. Lin L, Altiparmak, F, 2007, supply chain management, Computer & industrial engineering p.106
44. Dc velocity magazine, 30/6/2016 article amazon's 3pl encroachment to force traditional providers to overemphazis IT, <http://dcvelocity.com>
45. Pill Simone, 2011, The age of the platform., Motion publish,
46. Combe Colin, 2006, Introduction to e-business, Elsevir publish, p. 352
47. Lewis Robin, Dart Michael, 2014, The new rules in retail, Palgrave publish, p. 164
48. Lei David, Slocum John W., 2013, Dimystifying your business strategy, Routlege publish, p. 144
49. <https://archpaper.com/2017/08/architecture-fulfillment-centers/>
50. <http://www.ilsole24ore.com/art/finanza-e-mercato/2017-08-25/borsa-vendite-grande-distribuzione-amazon-tagliera-prezzi-whole-foods--112800.shtml?uuid=AEPIUHC>. In italian
51. <https://finance.yahoo.com/news/amazon-now-employs-whopping-542-003442087.html>
52. <http://channels.theinnovationenterprise.com/artical/amazon-s-supply-chain-process>
53. <https://www.forbes.com/sites/robinlewis/2016/04/01/planes-trains-trucks-and-ships/#1a4521f76d39>
54. The Economist Magazine, 23/03/2017, Amazon empire
55. Leinbach Thomas, Capineri Cristina, 2007, Globalized freight transport, Edward Elgar publish, p.1-3
56. Bruisma, F. Gorter. 2000, Multimodal in infrastructure, transport networks and the location of firms, Elsevir, p 259-281
57. https://www.safety4sea.com/wp-content/uploads/2017/10/McKinsey-Container-shipping-The-next-50-years-2017_10.pdf
58. Burns Maria G., a culture and geographic encyclopedia, volume 1. P.213
59. Xiaobing Li, Michael Molina, 2014, oil, volume 2., ABC-CLIO, pp 176-377
60. Arwen Armbrecht,2015. World economic forum, 6 facts about second suez canal

61. <http://www.sis.gov.eg/section/352/4710?lang=en-us>
62. Al masry al youm journal,19/10/2017, article, suez canal revenue up to 4.3 billion
63. Dr. Ezzat Kenawy, 2015, Kafr el Shiekh Uiversity, the economic impact of the new suez canal, p.7
64. Haskin Frederic, 1913, The panama canal, 1st edition, pp 2-11
65. <http://www.pancanal.com/eng/history>
66. Mimi Whitefiled, 17/6/2016, Miami Herald media, article, Panama canal ushers in new era of international trade and megaships
67. Panama canal authority, statement of costs of investment in progress, 2013 p.6
68. The Economist, 18/6/2016, article, What the expansion of panama waterway means to worldwide
69. Apics magazine, 30/1/2017, article, impacts of the panama canal expansion on global supply chain
70. QU, Xiaboo, Meng, 2012, griffith University, research the economic importance of straits of malacca and singapore. <http://research-repository.griffith.edu.au>
71. http://en.wikipedia.org/wiki/strait_of_Malacca
72. Thailand business news,30/10/201, article, Belt and road chines investment soars 119% in Malaysia
73. U.S energy information administration, 11/8/2017, strait of malacca key oil trade chokepoint
74. Joys Dela Pena, 2009, Stanford university maritime crime in the strait of malacca, springer publish
75. <http://www.straitstimes.com/asia/se-asia/malacca-harbour-plan-raises-questions-about-chinas-strategic-aims>
76. The world Bank, 2009, research on freight transport for development tool kit: Air freight
77. Peter S Morrel, 2016, Routledge publish, moving boxes by air: the economics of international Air cargo, p 9
78. The international air transport association (IATA),2017, value of air cargo report
79. Patrik Burnson, 28/02/2017, article Aircargo transformation is taken off due to e-commerce. logistics management magazines
80. Hans-Jorg Kreowaski, 2013, Dynamics in logistics, springer publish. Third international conference, p.236
81. Yingli Wang, Stephen Pettit, 2016, first edition, E-logistics, p. 58
82. <http://www.emirates.com/english/about/history.aspx>
83. <http://www.aircargonews.net/news/airline/single-view/news/everyones-a-winner-at-the-cargo-airline-of-the-year-awards-2017.html>
84. <http://www.siemens.com/press/PR2015040181COEN>
85. International assoication of traffic and safety(IATSS), 2005, vol.29, p.20
86. Juan F. Paz, 2017 Ambient intelligence-software and applications- 8th international symposium on ambient (ISAmI), springer publish, p.56-58
87. Dhl, 2017, sharing economy logistics research, rethinking logistics with access over ownership
88. Oliver wyman, 2015, omnichannel logistics
89. Dhl, 2016, omni-channel logistics report
90. Ovidiu Vermesan, Peter Friess, 2015, interenet of things -from research and innovation to market deployment, Rivers puplish, p.12-13
91. Hwaiyu Geng,2017, internet of things data analytics handbook, Wiley puplish. p.4-6
92. <http://www.tractica.com/newsrppm/press-releases/warehousing-and-logistics-robot-shipments-will-reach-620000-units-annually-by-2021>
93. <http://www.Morellogiovanni.it>
94. Antony M. Pagano, Mellisa Gyimah, 2017, contemporary issues in supply chain management, business experts press, chapter two
95. <http://www.garnter.com/it-glossary/augmented-reality-ar/>

96. Dieter Schmalstieg, Tobias Hollerer, 2016, augmented reality, Addison-wesley publish, chapter.4
97. <http://www.abiresearch.com/market-research/product/1027039-augmented-reality-in-warehousing-and-logis/>
98. <http://ir.vuzix.com/press-releases/detail/1571>
99. Peddi Jon, 2017, augmented reality, springer publish, p.100-103
100. <http://www.weforum.org/agenda/2015/02/what-are-the-key-factors-affecting-us-middel-class-incomes>

List of Figures

Figure 1. Figure Titel, Porter Value Chain framework, the graphic made by the author.....	9
Source; Porter Michael, 1985, competitivie advantages, harvard business school publish, ch1. The free press New York.	
Figure 2. Figure Titel, The evolution of the market.....	16
Source; https://www.frost.com/sublib/display-market-insight.do?id=8341069	
Figure 3. Figure Titel, Logistics cost breakdown.....	22
Source; https://people.hofstra.edu/geotrans/eng/ch5en/conc5en/logistic_costs_breakdown.html	
Figure 4. figure Titel, Amazon future.....	27
Source; https://www.economist.com/news/leaders/21719487-amazon-has-potential-meet-expectations-investors-success-will-bring-big	
Figure 5. Figure Titel, Amazon’s revenue growth estimated by analyst’s.....	29
Source; https://www.marketwatch.com/story/amazon-is-going-to-kill-more-american-jobs-than-china-did-2017-01-19	
Figure 6. Figure Titel, Amazons decrease prices first day in Whole Foods.....	31
Source; https://www.bloomberg.com/news/articles/2017-08-28/amazon-cuts-prices-at-whole-foods-as-much-as-50-on-first-day	
Figure 7. Figure Titel, Ships size and global canals capacity.....	35
Source; https://www.eia.gov/todayinenergy/detail.php?id=18011	
Figure 8. Figure Titel, The expansion of Suez Canal project.....	36
Source; Canal Suez authority	
Figure 9. Figure Titel, The new Panama Canal.....	40
Source; Panama Canal authority	
Figure 10. Figure Titel, Panama Canal containerised cargo volume by locks. Fy 15-17.....	41
Source: Panama Canal authority	
Figure 11. Figure Titel, Growth crude oil transit in Malacca strait.....	43
Source; https://www.eia.gov/todayinenergy/detail.php?id=32452	
Figure 12. Figure Titel, Emirates fleet growth.....	48
Source; https://www.airinsight.com/premium-emirates-fleet-review/	
Figure 13. Figure Titel, Sharing economy business model.....	52
Source: DHL sharing economy logistics, 2017, report	
Figure 14. Figure Titel, Modern shopper’s omni channel.....	55
Source; DHL omni channel logistics, 2015, report	
Figure 15. Figure Titel, Internet of things Ecosystem.....	58
Source; http://www.businessinsider.com/what-is-the-internet-of-things-definition-2016-8?I=T	
Figure 16. Figure Titel. The growth in robotics industry.....	59
Source; https://www.tractica.com/	
Figure 17. Figure Titel, Morello Material technology application in transporting Metal.....	60
Figure 18. Figure Titel, Morello AGV technology.....	61
Source; www.Morellogiovanni.it	
Figure 19. Figure Titel.Present and future of 3D printing.....	62
Source; Ernst & young, 2016, 3D printing report	
Figure 20. Figure Titel.Global AR revenue.....	64
Source; https://www.xcubelabs.com/our-blog/enterprise-mobility/augmented-reality-apps-the-future-is-real-virtual/	
Figure 21. Figure Titel. Decline in worker productivity.....	66
Source: Conference Board, Total Economy Database, Council of Economic Advisers calculations.	

