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THE IMPACT OF COVID-19 PANDEMIC IN THE AVIATION SECTOR IN EGYPT

By :
AMR MOHAMMED MOHAMMED SOBHY

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Hopefully, from now on, I will have time to compensate for the moments we couldn't share with my son, Eyad, and my daughter Dania.

Abstract

In this study, the "aviation sector" provided as one of the significant economic locomotives in Egypt, and its directly related industries wish to be monitor under the circumstances that occurred with the COVID-19 pandemic. Within the context of its geopolitical location and its historical heritage, aviation is highly critical to feed the 100 million population of Egypt through tourism and trade revenues. In this context, national and international adverse effects of COVID-19 on Egypt's aviation sector could be devastating for Egypt's already vulnerable economic structure. Therefore, decreasing or the possible hit to its economy, Egypt should first analyze the likely impact of the COVID-19 pandemic on the aviation sector, is one of its most important industries, and then create indicators and goals to overcome the threat its wellbeing. This study argues that Egypt has an enormous potential to be reached, under threat of the pandemic situation, and discusses possible challenges and measures to overcome the aviation sector's problems and consider Egypt's current political environment.

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ABBREVIATIONS

ANS	Air Navigation Services
ATC	Air traffic control
ATM	Air Traffic Management
CANSO	Civil Air Navigation System Organization
CDC	Center of Diseases and Control
EATCA	Egyptian Air Traffic Control Association
EATF	Egyptian Air Transport Federation
ECAA	Egyptian Civil Aviation Authority
EOC	Emergency Operations Centers
GDP	Gross Domestic Product
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IHR	International Health Regulations
ILO	International Labor Organization
LEGOSH	ILO Global database on OSH legislation
NANSC	National Air Navigation Service Company
NGO	Non-governmental Organization
MOA	Ministry Of Agriculture
MOHP	Ministry Of Health and Population
MOI	Ministry Of Industry
MOMM	Ministry Of Manpower and Migration
MSEA	Ministry Of State for Environmental Affairs
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (USA)
PPE	Personal Protective Equipment
RPKs	Revenue Passenger Kilometers
UPK	Universal Precaution Kit
WHO	World Health Organization

CHAPTER ONE
INTRODUCTION

At the beginning of 2019, no one could have predicted a pandemic like the one we are currently experiencing. There has been no comparable crisis in the global impact on the economy, society, and (mostly) health since the last world war. The aviation industry is one of the most negatively affected by this impact.

Much of the economic development around the world was associated with air transportation. Initially driven by information technology, globalization has been brilliantly supported by an industry that has facilitated people and goods' movement on an unprecedented scale. Many sectors become competitive as a result of the development of aviation.

The recent outbreak of COVID-19 has raised concerns regarding the spread of diseases worldwide within a short timeframe and its operational and economic repercussions. Paradoxically, this raised movement of people has been a major contributing factor to the current COVID-19 crisis. One of the characteristics of COVID-19 is its too high contagiousness, which makes our contemporary society an optimal breeding ground. From now on, we know that the risk has always been present, and we should learn to foresee it. The spread of the virus has affected border control measures, aviation operations, and the global economy. Many of the world's population is on lockdown to stop the outbreak of COVID-19, a public health emergency that has claimed millions of lives and sparked fears of the worst world recession since the Great Depression. It has had a severe impact on the world of work and our mental and physical well-being. Except for healthcare, few industries are more severely affected by the latest coronavirus pandemic than global aviation.

Airlines worldwide are confronting the challenge of a sharp decline in demand, complicated by almost total uncertainty about when the virus will be under control and travel can return to normal. According to the International Air Transport Association (**IATA**), at the beginning of 2020, the airline industry was maintaining a long-term annual growth rate of 5.5%. In the current situation [1] (IATA, n.d.), where governments are drastically reducing travel and airlines are canceling flights and grounding their fleet, revenue from passengers reduced to zero. In this

regard, this will result in a loss of operating cash flow over the next few months of tens of millions of dollars and the cost of customer refunds. Some airline operators worldwide have already requested state support due to the sudden plunge in passenger traffic. Many of the hardest-hit countries, such as the United States and Italy, have seen ticket sales plummet. In Italy, the drop exceeded 80 percent at times [2] (oecd.org, n.d.). In the US, failure to conduct early broad-scale testing and respond more aggressively has led to a rapid spread of the virus. The number of confirmed US cases of COVID-19, the name for the disease caused by the Coronavirus, topped 213,000, as of April 2, according to the US Centers for Disease Control and Prevention. That is several times higher than the official COVID-19 count in China, where the population is four times the US's size. [UPDATE: As of April 12, confirmed cases in the US were more than 525,000, and deaths exceeded 20,000, according to the CDC] [3] (cdc.gov, n.d.).The collapse in demand has led major airlines worldwide to announce cost-cutting measures, request government assistance, and central bank loans in the case of particular airlines, ground fleets. Many airlines are seeing more cancellations than bookings. We expect a depressed demand environment and reduced global revenue passenger kilometers (**RPKs**) (a widely accepted metric of air travel demand) to persist well into 2021. The next issue in the chain of events is that many airlines will not maintain their planes leases, directly affecting aircraft leasing companies, which currently account for more than half of all operational aircraft. Similarly, operators who have orders for aircraft presently in progress will be quick to negotiate with manufacturers to arrange cancellation or, at best, an indefinite delay in delivery.

In the airport sector, we already see empty airports. Domestic flights have reduced to a bare minimum due to the restrictions on movement imposed in dozens of countries, including Egypt. For airports, this means minimizing their activity in the immediate term and closing their commercial areas, halting the movement of airport service companies, and reducing their operating income practically to the lowest levels. Another negative impact is the other business network surrounding airports, which is inevitably experiencing the same trend.

Regarding the aircraft manufacturing industry and its supply chain, three significant factors play an essential role:

1. There is the necessary adoption of preventive measures to avoid the Coronavirus spread concisely.
2. The lack of a supply chain necessary for ensuring the aviation industry's continuation will lead to an immediate drop in productivity.
3. In the long term, the airline crisis will decrease and even cancel new aircraft orders.

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In the case of airports operation, the entire business network associated with aeronautical manufacturing will be similarly affected. Simultaneously, this same industry is becoming an essential focal point in the fight against COVID-19. Aircraft play a vital role in the rapid dispatch of supplies, medical teams' movement, and citizens' repatriation.

On the other hand, The Egyptian Prime Minister said that his country would bear significant losses, especially in the national aviation sector, after suspending air traffic until the end of March. Mustafa Madbouly added at a press conference on March 16 that losses of the National Air Egypt air would reach 2.250 billion pounds due to the decision, explaining that the state will bear these losses, according to a direct broadcast on national TV. He stressed that all these measures come as precautionary measures to prevent the outbreak of the Coronavirus in the context of the government's concern for citizens' safety, explaining that the Egyptian tourism sector will be at the forefront of those affected by this decision. He pointed out that there is an opportunity to thoroughly sterilize all the tourist facilities and hotels in Egypt to prevent the Coronavirus outbreak during the suspension period. It is noteworthy that the Egyptian government decided to suspend air traffic at Egyptian airports starting from March 19 till further notice. The International Air Transport Association (IATA) affirmed its call to governments in Africa and the Middle East to take urgent measures and provide financial aid to airlines due to the losses they face due to the outbreak of the COVID-19 and the closure of several countries to their airspace. The latest scenario for the Union indicates that the potential loss in airline revenue in Africa and the Middle East amounts to 23 billion dollars, 19 billion dollars in the Middle East, and 4 billion dollars in Africa, which means 32% of industry revenue to Africa and 39% to the Middle East for 2020 compared to 2019. The Union estimated in its report published on its official website losses of the aviation sector in Egypt at a value of $ 1.6 billion, as a result of the loss of 9.5 million passengers and that it may face a loss of approximately 205,560 jobs, these losses will lead to further losses in the Egyptian economy valued at About 2.4 billion dollars [4] (Reuters, n.d.).

The objective in all events priorities is the implementation of OSH measures that ensure the continuity of this industry by the workers in the aviation workplaces. Firstly, as this will change the workplace safety measures and redefine risk evaluation processes in these extreme circumstances, and secondly, because it is the only way we will be able to maintain an industrial structure, once this period passed, it will help create and retain jobs in a safe manner. When we

overcome this first challenge, we will analyze the situation we will be facing next and what the restart will be.

First, OSH measures may change after having this experience. In cooperation with respective health ministries, governments are implementing preventive measures throughout aviation workplaces to deal with the outbreak, such as temperature checks, health screenings, installing different hand-sanitizing stations, stepping up scheduled cleaning, and enhanced sanitization efforts, managing the response to the incident through Emergency Management departments and Emergency Operations Centers (EOC). So, yes, the answer was quick and efficient. It supported the national direction for social distancing, mitigated further spread, ensured the continued operation of airports, and managed the incident.

Of course, the production environment was severely damaged and will have to restart little by little.

The ensuing period will not be comfortable; it will inevitably be challenging, and many have some sacrifices. Together we must learn from this event to rebuild our aviation business networks, making them more robust and productive. Hopefully, it is possible.

Now is the time to act sensibly, responsibly, and challenging, addressing our safety and health first (workers, customers) current situation and begin the necessary recovery. This time like no other, it is crucial for us to be united and collaborated locally and internationally. Pandemic coronavirus may be an important lesson in what globalization means, and we must learn from it to tackle the new challenges that await us as a planet.

CHAPTER TWO

Egypt general information and data

2.1. General data and related legislation

2.1.1 Major Egyptian economic data

Egypt has one of the most developed and diversified economies in the Middle East [5] (tradingeconomics, n.d.). Until 2010, the Egyptian economy grew an average of 5 percent a quarter due to several economic reforms attracting foreign investments. During that time, the economy and the living standards for the majority of the population improved. Yet, living conditions for the average Egyptian remained low-, and large-income disparities continued to grow, leading to public discontent. The 2011 revolution, which brought down President Hosni Mubarak's regime, has caused an economic slowdown as political and institutional uncertainty and rising insecurity continue to hurt tourism, manufacturing, and construction.

The Gross Domestic Product (**GDP**) in Egypt expanded 4.80 percent in the fourth quarter of 2019 over the same quarter of the previous year.

It is also important to state that the GDP per capita (in international $) was 280 billion US dollars by the end of 2018.
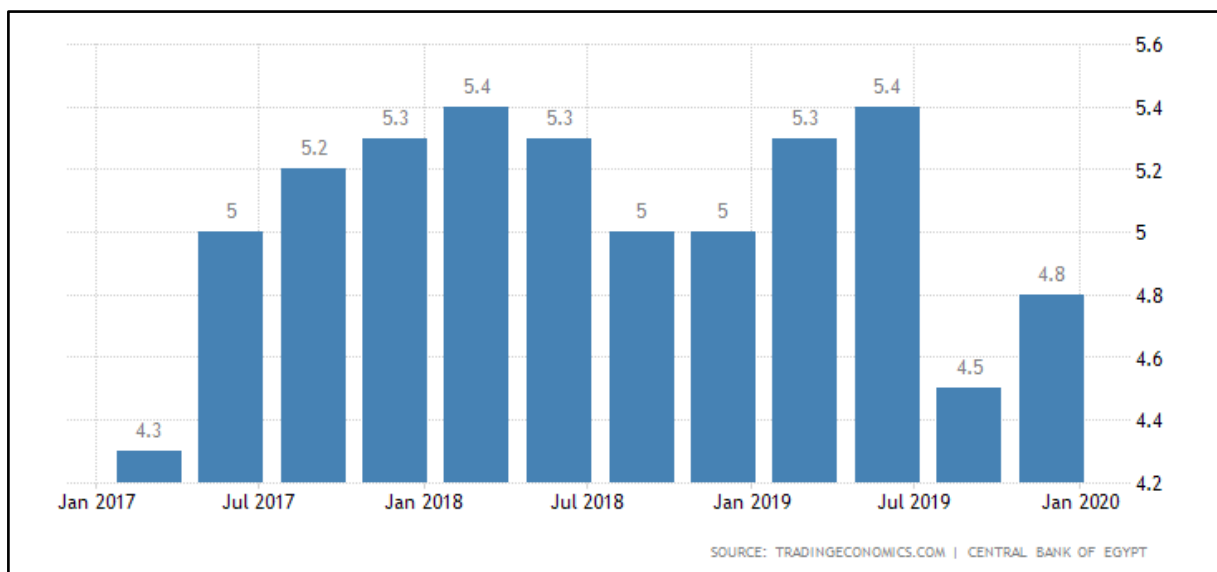
Figure 1. GDP growth rate of Egypt from Jan 2017 to Jan 2020 (Egypt, n.d.)

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GDP Growth Rate in Egypt is expected to be 1.70% by the end of this quarter, according to Trading Economics global macro models and analysts' expectations. Looking forward, we estimate GDP Growth Rate in Egypt to stand at 2.70 in 12 months' time. In the long-term, the Egypt GDP Growth Rate is projected to trend around 3.50 percent in 2021 and 4.60 percent in 2022, according to Egyptian econometric models.)

GDP From Transport in Egypt decreased to 45325.30 EGP Million in the third quarter of 2019 from 50233.90 EGP Million in the second quarter of 2019. Egypt is the third-largest economy in the Arab world. Services are the most important sector of the economy and account for around 47.5 percent of the total GDP. The most important segments within Services are Wholesale and Retail Trade (10% of the output), Government (9%), Transportation and Communication (8%), Finance, Insurance and Real Estate (8%), and Tourism (4%). Industry constitutes 30% of the output, and the largest segments within this sector are Manufacturing (15.5%) and Extraction (13.5%). Agriculture accounts for 14.5% of output and Electricity, Water, Sanitation, and Construction for around 7% [6]. (IATA, n.d.) The air transport industry, including airlines and its supply chain, is estimated to support US $3 billion of GDP in Egypt. Spending by foreign tourists supports a further US $4.1 billion of the country's GDP, totaling the US $7 billion. In total, 2.1% of the country's GDP is supported by inputs to the air transport sector and foreign tourists arriving by air [7] (IATA, n.d.).

The aviation/Air transport sector supports airlines, airport operators, airport on-site enterprises (restaurants and retail), aircraft manufacturers, and air navigation service providers that employ 97,000 people in Egypt. In addition, by buying goods and services from local suppliers, the sector supported another 102,000 jobs. On top of this, the sector is estimated to support a further 20,000 jobs through the wages it pays its employees, some or all of which are subsequently spent on consumer goods and services. Foreign tourists arriving by air to Egypt, who spend their money in the local economy, are estimated to support additional 383,000 jobs. In total, 602,000 jobs are supported by air transport and tourists arriving by air. [8] (IATA, n.d.).
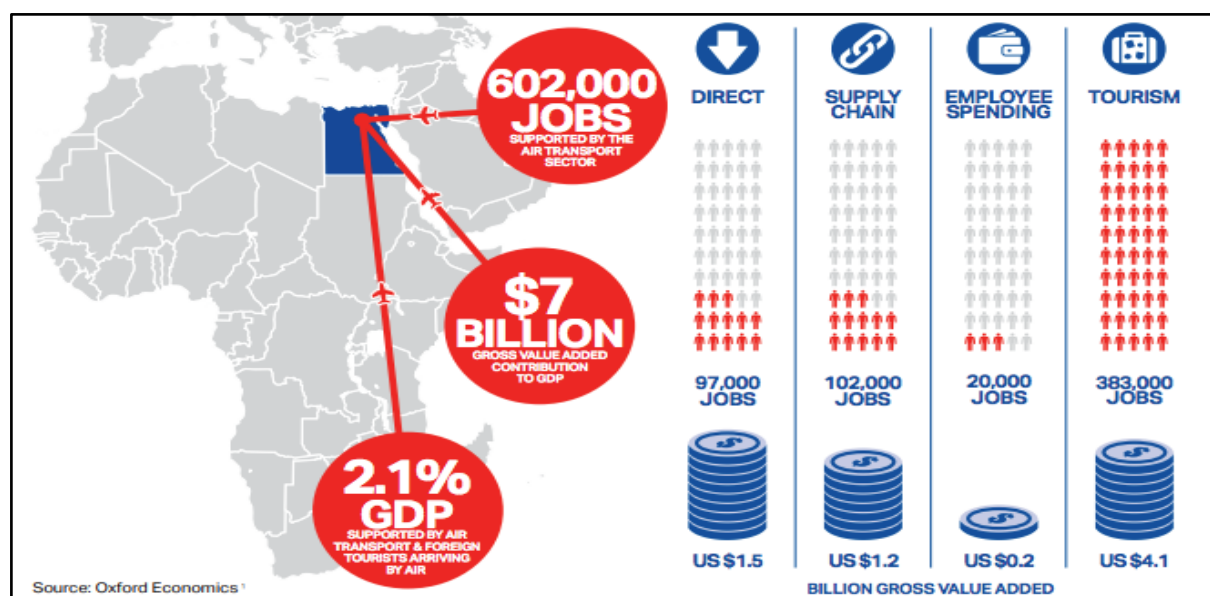
Figure 2: Annual passenger Flows by region (IATA, n.d.)

Annual passenger Flows by region. Middle East is the largest market for passenger flows to and from EGYPT, followed by Europe and Africa. 6.1 million passengers arrived in Egypt from the middle east (46.2 percent of total), 3.9 million passengers arrived from Europe (29.3% of the total), and 2.2 million passengers arrived from Africa (16.6%) [9]. (IATA, n.d.)

Egypt is a pioneering country in air transport in the Arab region and the Middle East. The first airline was founded in Egypt (Egypt air) on May 7, 1932. Today Egyptian airlines extend worldwide. The creation of the first Egyptian airport, "The Almaza airport," actually began in 1930 and was inaugurated on June 2, 1932. Opening Cairo International Airport in 1963 with five million passengers/year against a current capacity of up to 30.5 million passengers/year. Egypt has about 23 airports, and airlines reach 72 cities and capitals of the world and 12 Egyptian cities. The number of aircraft belonging to Egypt air is 75, according to the 2014 statistics, in addition to more than six leased aircraft [10]. (sis, n.d.)

On December 17, 2014, President Abdel Fattah Al Sissi inaugurated the new airport of Hurghada that will enhance the absorption capacity of 13 million passengers/year against the current 5 million passengers /year. It is one of the major projects being implemented by the Department of Civil Aviation, under an estimated investment cost of LE 2.4 billion. This airport is an artistic and architectural masterpiece that corresponds to the most modern international airports regarding its capabilities and services that ensure comfort and well-being. Constructing

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the new building on 93,000 m2, including a departure lounge on 30,060 m 2, an arrival hall over 25,880 m2, and a service area on an area of 32,988 m2 (news, n.d.) [11]

Egypt acknowledges that its aviation's importance continued to plan its investments in the sector, especially in 2015. The majority of the projects are to increase the quality and quantity of the service provided to customers. Accordingly, constructing a new passenger building at Sharm El Sheikh International Airport will increase the absorptive capacity to 18 million passengers/year. a passenger building # 2 at the Cairo international airport before the end of 2017 with an assimilative capacity of 7.5 million passengers/year [12] (technology, n.d.)

Establishing a new passenger building in Borg Al Arab Airport in 2015, the first ecological airport depending on solar energy, and has an assimilation capacity estimated by 4 million passengers [13]. (technology, n.d.)

Among the planned giant projects, the largest one is that the standalone project, which will name "Airport City" to include many commercials, industrial, logistics, and entertainment activities in addition to the embarkation of goods, within the framework of the transformation of the Cairo International Airport to a pivotal one. Part of the plan is to link the new project "Airport City" with the Suez Canal National project and the port of El Sokhna. The project finance and investments to reach about 80 LE billion, is expected to provide youth with thousands of job opportunities [14]. (today, n.d.)

2.2 Legislative framework on OSH

In Egypt, the earliest legislation on occupational health on July 5, 1909. It concerned the employment of children in cotton ginning factories. Since then, several Acts issued, including sections dealing with factory workers' health and welfare. Employment of workers, employment conditions, and agencies competent in occupational safety and health, as well as penalty clauses, are covered by Act No. 91 (April 5, 1959) (Labor Code). (IUPAC Training Program Report at Bayer Crop Science. The first comprehensive Labor Law, numbered 91, issued on April 5, 1959, replaced: Act No. 48 (1933) governing the employment of juvenile workers of both sexes in the industry; Act No. 80 (1933) concerning the employment of women in the industry; Act No 147 (1935) fixing the number of hours of work in specific industries; Act No. 317 (1952) on individual contracts of employment; Act No. 46 (1958) organizing work

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in mines and quarries, and Act No.14 (1959) governing vocational rehabilitation and employment of disabled persons. [15] (IUPAC, n.d.)

2.2.1 OSH requirements in the Egyptian Constitution

Although there is no direct reference to OSH requirements in the country's Constitution, a reference to gender equality in political, social, cultural, and economic fields (art. 11) and everybody is right to work. The Constitution forbids forced labor (art. 13), mentions the duty of the state to protect employees (art. 14), and its obligation to provide cultural, social, and health services (art. 15).

2.2.2. Major OSH laws and regulations

Law No.12 (2003), Book V: Occupational safety and health (OSH) and Assurance of the adequacy of the Working Environment, Law 12 (2003) is the Code. Its revised version, published in the Official Egyptian Gazette No. 14 (rep.) on April 7, 2003, entered into force on July 7, 2003. Law 12 (2003) replaced Law 137 (1981) and ministerial decrees No. 33/1982, 119/1982, 105/1987, 142/1988, 145/1988, and 10/1991.

The objective of Law 12/ 2003 is to organize employment relations, illustrate the duties and rights of the parties to the employment agreement, and to enforce safety and health at the workplace. It devotes a specific section (Book V) to occupational safety and health and Assurance of the working environment's adequacy. It is supplemented by Ministerial decrees which elaborate more specific technical provisions, the most important ones being:

- Decree No. 126 (2003) replacing No. 75 (1993) defining procedures and forms for the notification of work-related accidents, injuries, fatalities, and diseases,
- Decree No. 211 (2003) replacing No.55 (1983) specifying conditions and precautions essential for the provision of OSH measures at the workplace,
- Decree No. 134 (2003) replacing No. 116 (1991) defining the types of establishments covered, OSH services and committees, and related OSH training institutions.
- The objective and scope of book V of law 12/2003 om OSH IS to ensure workers' safety and health in all work and production Book V of Law 12/ 2003 OSH. It provides the necessary elements for such an objective to meet at the enterprise level and the national level, particularly concerning the implementation of its requirements.

These elements mainly consist in a guideline frame regarding the Requirements for the selection and establishment of sites responsibilities of employers to ensure safety and health at workplaces establishment of the administrative authority to enforce its provision (OSH inspection) Organization of OSH at the enterprise level (OSH Committees) obligation of employers to report accidents at work and provide related statistics Setting-up of consultative bodies at national and provincial levels (governorates). [16] (Research, n.d.)

According to the book V scope, the law's safety and health provisions apply to all establishments in the private and public sectors, civilian government units, local (municipal) government services, and public authorities (article 203). It requires prior authorization and licensing to set up and operate an industrial, commercial, or another establishment (art. 204 - 215), defined as a business or undertaking in the public or private sector (art. 203). Nevertheless, it does not apply to household servants and family members who are the employer's direct dependents. Book V of Law 12/ 2003 applies to all industry branches, including the construction industry, commercial establishments, and agriculture. It applies to all working sites and establishments, once authorized, whatever the number of workers employed. Specific provisions apply to establishments with more than 15 to more than 50 workers.

OSH in mining, quarrying, and regulating activities by law No. 27 (1981), and chemicals, as well as significant hazard installations, are partly covered by Law No. 12/ 2003, decree No. 211 (2003) and also by Law No. 4 (1994) on the protection of the environment with its executive regulations.

Role and responsibilities of employer according to Law 12/ 2003 stipulate that the employer takes all necessary measures to ensure safety and health at the workplace, in particular concerning mechanical, physical, chemical, and biological hazards (art. 208). The law also requires the medical examination of the worker before employment, i.e., pre-placement (art. 216), first aid measures, medical attention and treatment depending on the number of workers employed (art. 220), and also a periodic medical examination of those workers who are exposed to the risk of any occupational diseases (art.219) listed in Decree No. 3 Annex I (2004) of Law 79 (see under section 2.3.3). Employers shall inform workers of the dangers they may face in the non-observance of protective measures and provide them with personal protective equipment (art. 208 - 215). It also lays down the principle of establishing an OSH Committee.

Defining the composition and function of the OSH Committee in Decree No. 134, described under section 2.2.2. [17] (Manopwer.gov, n.d.)

The legislation does not only improvise sanctions or obligations to employers but also for workers and the government. Accordingly, every worker is required to follow protective measures and observe safety precautions set by the employer. The establishment is authorized to take disciplinary action against a worker who does not follow the safety precautions as prescribed (article 218 of the law, article 57 of Law 79/1975, and Decree No. 48/1967). Workers within OSH Committees in establishments employing more than 50 workers (Decree 134/2003 replacing 116/1991). The law stipulates that this committee shall study working conditions and causes of accidents and diseases. It shall also specify preventive measures (art. 227). The employer shall be responsible for executing these recommendations. However, the law does not stipulate that the employer should make a risk assessment of work processes, machines, and equipment used in the enterprise. Decree No. 134 also stipulates that appropriate training to members of the OSH Committee. However, evaluating the quality of training provided under the law is not done. Besides, employers do not send OSH Committee members systematically to compulsory training. Only labor or OSH inspectors can remind them of their obligations if necessary.

The government's role and responsibilities are maybe the most crucial leg of the legislation to ensure the labor market's stability. The role of public authorities as defined in Law 12/ 2003 is to ensure implementation of national OSH legislation and to formulate national OSH policy and coordinate with all parties involved through consultative bodies (at the national and provincial level as elaborated in Decree No. 114/84). Besides, Book V of law 12/ 2003 stipulates the setting-up of a Supreme Advisory Council on OSH (art. 230), which is described under section 3, "National policy review mechanism."

According to Book V of law 12/ 2003, the Ministry of Manpower and local council authorities responsible for workforce shall have the sole competence to inspect establishments to ensure compliance. He supervises OSH legislation's enforcement by an inspection system precisely defined in Book V and section 3 of the present profile.

The table below shows the obligation of maintaining and dimensioning in-company OSH services:

Economic Activity	OS&H Technical Members Specialist Technicians Workers			Number of workers / Shift
Industrial	- 1 2 1	1 2 3 2	- - - -	50 - 200 200 - 500 500 - 1000 for every 1000 above mentioned
Non-industrial	- - -	- 1 1	1 - -	50 - 200 200 - 500 for every 500 above mentioned

Table (1): Number of workers per shift per economic activity [17] (Manpower.gov, n.d.)

Specialists: One has a university degree following the working condition in an economic establishment (facility): medicine, engineering, science, agriculture, or pharmacy.

Technician: is one having a degree, less than a university degree, i.e., from industrial institutes, vocational training institutes and centers, health institute, high industrial or agricultural schools, vocational, military training institutes, preparatory industrial school graduates equivalent to those graduated from industrial high schools, and graduates of the general secondary school certificate (scientific section).

Workers: This is a new addition by the recently issued decree no. 134/2003.

2.2.3. Executive ministerial decrees

In addition to Law 12/ 2003, workers' protection against hazardous processes, machinery, and equipment, hazardous chemical, physical and biological agents by three major decrees, No.126, No. 211, and No. 134.

Decree No. 126/2003 (replacing MD 75/1993) defines procedures and forms for notification of accidents and diseases at work. It also specifies the type of statistics on significant injuries and accidents that should be collected and notified.

Decree No. 211/2003 (replacing MD 55/1983) specifies the necessary conditions required for a safe working environment concerning physical, mechanical, electrical, chemical, biological, and other hazards. Special chapters provide "Maximum Allowable Concentrations" for more than 600 chemical agents in the working environment, safe levels of physical parameters (heat and cold stress, noise, vibration, illumination, radiation, static electrical fields, classification of jobs according to physical workload), and a list of suspected chemical carcinogens (86 agents). Specifications for construction works (ladders, scaffolds, ETC).

Decree No. 134/2003 (replacing MD 116/1991) defines the industrial and non-industrial enterprises which should have an OSH department and a joint OSH Committee. It also

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regulates training in occupational safety and health for workers/managers involved with OSH in the enterprise. The decree stipulates that every establishment or branch thereof, at which 50 or more workers, shall assign the industrial safety task to an OSH department and a joint OSH committee, where some technicians and specialists are working full-time OSH controllers and supervisors. The main functions of OSH technicians and specialists are

1. periodic inspection of the workplace,
2. to investigate accidents and determine its causative factors,
3. to investigate the incidence of occupational diseases and determine their causative factors,
4. to maintain statistical information,
5. to check firefighting equipment and follow-up protective measures,
6. to participate in safety committee meetings,
7. To specify preventive measures (art. 227).

The OSH committee consists of the facility owner, his representative or the general director, Heads of central production sections/ departments, Representative of Civil Defense, Facility physician (if present), the person in charge of occupational safety and health at the facility, a number equal to above members, from local trade union members, and selected from the same production sections/ departments. In separate workplaces belonging to the same establishment, a central committee is at headquarters. Composition of OSH staff within the OSH department at Different Facilities, according to Economic Activity and Number of Workers. The law also identifies the specialist's technicians and workers.

The decree urges employers to provide training to OSH committee members and be carried out by two major institutions.

2.2.4 Laws and regulations indirectly related to OSH

A certain number of decrees regulate medical examination, identification of diseases giving the right to compensation. They are in Annex (2). (Also see section 2.3.1 Related to occupational health services).

2.2.5 Correspondence with ILO instruments

Egypt has ratified 63 Conventions, including the eight fundamental ones. Convention 182 on the Worst Forms of Child Labor, 1999 in 2002, and a new list of hazardous jobs. (Convention 138 on minimum age, 1973 was previously ratified in 1999). Convention 129 ratified on. Labor Inspection (Agriculture) in June 2003.

Among the essential OSH instruments, i.e.:

Convention 129, Labor Inspection in Agriculture, 1969, Convention 136, Benzene, 1971 Convention 139, Occupational Cancer, 1974 Convention 148, Working Environment, 1977 Convention 155, Occupational Safety and Health, 1981 Convention 161, Occupational Health Services, 1985 Convention 162, Asbestos, 1986 Convention 167, Safety and Health in Construction, 1988 Convention 170, Safety in the Use of Chemicals, 1990 Convention 174, Major Industrial Hazards, 1993 Convention 176, Safety and Health in Mines, 1995 Convention 184, Safety and Health in Agriculture, 2001 Convention 81 on Labor Inspection, 1947.

Convention 129, 139, and 81 were ratified in 2003, 1982, and 1956 respectively. However, Egyptian legislation covers most of the requirements and provisions entailed in the above-listed instruments. Other instruments are C 115 Radiation Protection Convention, 1960 (ratified in 1964), C134 Prevention of Accidents (Seafarers), 1970 (ratified in 1982), C 152 OSH (Dock Work), 1979 (ratified in 1988), C 89 Night Work (Women), 1948 (ratified in 1960) 102915 Occupational diseases contained in Recommendation No. 194, 2002, are partly covered by the new schedule of occupational diseases. (see annex 1) [18] (ILO, n.d.)

2.3. Policy, structure, and responsibilities

2.3.1 National Policy Review Mechanism

The tripartite body responsible for the national policy and programs' formulation and review process is the Supreme Advisory Council on OSH. Its setting-up is defined by Law 12/2003. The Minister of Manpower consists of 25 members, including representatives of workers and employers' organizations and several Ministries such as agriculture, industry, environment. and agencies concerned with OSH issues. The council is responsible for a) drawing-up a general OSH policy and b) coordinating work and organizing cooperation between all parties interested in OSH, particularly those involved in research, training, legislation, and OSH programs implementation. At the governorate (province) level, Law no.12/2003 also provides for the setting-up of a similar joint advisory Committee, headed by the governor, with the same

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composition as the national level. Such committees decide on OSH policies and programs for the Governorate [19] (Egypt.gov, n.d.). Since its establishment by decree No. 114, 1984, implementing law no. 137/1981, the Supreme Council was only revitalized during 2001-2003. However, its efficiency improved by assigning a permanent secretariat to convene meetings, follow-up on decisions, and prepare reports agreeing upon well-defined plans and tools/mechanisms and following up their implementation. (see annex 2)

Decree no. 985/2003, implementing law no.22/2003, was issued by the prime minister to replace decree No 114, 1984, implementing law no. 137/1981. Decree no. 985/2003 established the Supreme Consultative Council for Occupational Safety and Health. see annex 2)

2.3.2 Coordination and collaboration including collective bargaining agreements

Employers and workers organizations are regularly consulted on OSH issues within the consultative bodies in the enterprise. However, a strong commitment on both parts would significantly improve safety and health at the workplace. In Egypt, dialogue on OSH on national and enterprise levels. The government has an active role in OSH regulation and supervision with its Supreme Advisory Council on OSH. Apart from elaborating the general OSH policy and programs, the council coordinates and organizes cooperation among all parties interested in OSH, particularly those involved in research, training, legislation, and implementation of occupational safety and health programs.

At the government level, the same institution exists with the same composition and function in the governorates' regions. However, it is totally under the governor's authority, which makes its mechanism slightly more flexible. The central authority of OSH in the government is the National Institute for Occupational Safety and Health - NIOSH (see annex 3), its governing body, which is chaired by the Minister of Manpower. It is also a tripartite body where employers and workers organizations have a significant say in the Institute's program. Besides, the General administration for OSH of the Ministry of Manpower, this authority is empowered by decree No.134/2003 (see annex 2) to establish a tripartite committee to formulate and review the training policy OSH organized at the enterprise level. Under the Ministry of Environment, EEAA has developed an Information and Management System for Hazardous Substances (**EHSIMS**). This system operates within a network of 7 Ministries (Agriculture, Health,

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Industry, Manpower and Migration, Electricity, Petroleum, and Interior) as well as the Customs Authority and Civil Defense [20] (eeaa.gov, n.d.).

Ministry of Manpower at the enterprise level by decree No. 134/2003 (see annex 2) establishes a tripartite committee to formulate and review the training policy on OSH organized at the enterprise level. The setting-up of occupational safety and health (OSH) committees is required by law for all enterprises with more than 50 workers. The committee is empowered to investigate accidents and diseases and to suggest preventive and control measures. The employer is obliged to execute the recommendations of the committee. The committee runs under the chairmanship of a director of the enterprise with equal representation of employers and workers representatives [21] (Egypt.gov, n.d.).

2.3.3. The adoption of Convention No. 144 on the Tripartite Dialogue

The efforts of the Egyptian state after the adoption of Convention No. 144 on the Tripartite Dialogue to promote and support labor standards The International Labor Organization formulates labor standards through dialogue and consultation between the three labor parties, as well as it promotes and introduces international labor conventions on social dialogue and in the third consultation, and recommendations. It also links the technical cooperation activities provided by the organization with the necessity of promoting social and tripartite dialogue to ensure the participation of the dialogue parties in the formulation and implementation of public policies as it values social dialogue and makes it a strategic goal for decent work and social justice policies, and a fundamental tool to achieve the goals of the labor organization International [22] (ILO, n.d.). through:

1. Information sharing:
The exchange of information between the different ministries at the national level and the general trade unions is one of the most necessary elements for effective social dialogue. The exchange of information in itself may indicate any joint dialogue activity between social parties. However, it constitutes the necessary introduction to any dialogue, decision-making, or access. The burden of guarantees for the parties to make the information they have on them falls on the government.

2. Consultation:

Consultation is the exchange of opinions and ideas. It requires social parties' participation in expressing views on issues related to common relations, especially those related to social dialogue, in a way that facilitates and makes it more in-depth and productive. Consultation can take place through the formation of bilateral or tripartite consultative bodies according to the case, such as Personnel committees, wages and incentives committees, production committees, occupational safety and health committees, and social services committees.

3. Collective bargaining:

Collective bargaining is the most critical and widespread model and form of practicing social dialogue. Social parties can reach through reaching agreements, whether at the institution, sector, geographical area, general national level, or even international level. Primarily since collective bargaining by having specific and known legal parties.

4. The National Economic and Social committees in the Egyptian Parliament:

The National Economic and Social committees are one of the forms of economic and social dialogue and consultation; However, its name may differ from another country, it remains an essential framework for consultation on economic and social issues through an entity that includes representatives from different groups of society, especially the vulnerable. Among them are civil society organizations, experts, researchers, and others. This council can be a mechanism for dialogue, consultation, and opinion on public issues. [23] (SIS.gov, n.d.).

2.3.4 Collective Bargaining in the Egyptian labor law

Collective bargaining in the Egyptian labor law is the dialogue and discussions between trade union organizations and between employers or their organizations to:

(1) Improve the terms and conditions of work and employment.

(2) Cooperation between the two work parties to achieve social development for the enterprise's workers.

(3) Settlement of disputes between workers and employers.

The Egyptian labor law focus in (Article 147) stipulates that collective bargaining shall take place at the level of the establishment, branch of activity, profession, or industry, as well as at the regional or national level [24] (Manpower.gov, n.d.).

Also, Article 148 in the Egyptian labor law stipulates that negotiations in establishments employ fifty or more workers between representatives of the establishment's trade union committee and the general union and the employer.

If there is no trade union committee in the facility, negotiations between the employer and five workers are selected by the relevant general union, provided that at least three of them are from the establishment's workers. They concern establishments that employ less than fifty workers, negotiations between representatives of the relevant general union and representatives of the concerned employers' organization or the employer. The representatives of each party are legally authorized to conduct negotiations and conclude the resulting agreement. Suppose one of the parties refuses to start the collective bargaining procedures. In that case, the other party may request the competent administrative authority to move the negotiation procedures to notify the employers' organization or the workers' trade union organization, as the case may be, to initiate the collective bargaining on behalf of the refusing party. The competent organization, in this case, is legally authorized to negotiate and sign a Collective agreement.

2.4. Use of ILO codes of practice by national authorities, Industry and Trade Unions

Egypt has ratified all the ILO fundamental conventions; ILO Codes of practice are well-known, but unfortunately not systematically applied. Those translated in Arabic are more likely to be used. However, OSH requirements are present under many laws and regulations. Mention that ILO Codes of practice on the safe use of chemicals at work and the prevention of significant industrial hazards and the training manual on chemicals (IPCS). Using parts of the ILO Major hazards training manual have been incorporated into the Egyptian Hazardous Substances Information and Management System (EHSIMS) developed under the Ministry of Environment. By ratifying Conventions No. 170 and 174 (July 2001), the government empowers these actions:

1- A Committee involving MOMM, MOHP, MOA, MOI, and MSEA has established a list of banned hazardous chemicals and a list of restricted hazardous chemicals subject to licensing; and Updated form of Decree No. 55. (See annex 1).

2- the General Administration on OSH of the Ministry of Manpower participates in various committees at EEAA (Egyptian Environment Affairs Agency) and EOSQC (Egyptian Organization for Standardization and Quality Control) to define some OSH technical standards and specifications for industrial facilities.

CHAPTER THREE

Structure of aviation system

3.1. Aviation essential

It is considering the air transport industry, one of the most essential and vital industries globally, contributing to developing countries' economies, significantly increasing their financial resources, and professionally refining their human resources. It also contributes to increasing the national income of countries, directly through-plane travelers, airport users, and airspace, and indirectly through the use of many services by travelers, such as hotels, restaurants, hospitals, and other transportation, such as public transport, trains, and other industries that advance the economies of countries.

Also, the industry depends on qualitative expertise that is difficult to obtain quickly due to its quality. The air transport industry base is several elements, the most important of which are four, which are the so-called economics of air transport and are considered essential and vital. In no way can the air transport industry's advancement in any country without taking care of it and developing it in the best possible way, namely: airlines, airports, air navigation services, and ground services. These elements contribute to the civil aviation industry's success for any country, which is considered an essential industry for its direct and indirect contribution to the national income.

Therefore, we find many countries seeking development by setting specific strategies and objectives for these elements. One of the most important of these elements is the airline, which is a highly influential factor in this industry's contribution to the national income, as it serves tens of millions of domestic and international travelers. Every country must facilitate substantial national carriers that serve all travelers by reaching the largest number of local and international stations in particular. For achieving national airlines' strategies, it should include action plans to connect travelers from east to west, for example, using the hub airports model. The civil aviation authorities seek to enable the largest number of their national carriers to participate in the air transport process, provided that the air traffic between them and any other country is on par with the national carriers of the other party. In no way can this acquired right be waived under bilateral agreements and international considerations to any other party. As

any neglect of it is a waste of economic resources and social development. Air transport is inherently connected with tourism, providing ground for its development. Undoubtedly, both industries develop in parallel, and any events taking place in either of them impacts the other. The historical evolution of both sectors reveals this dramatic interdependence. The demand for transport derives from people's desire to go somewhere in order to be engaged in spatially constrained activities (including leisure and business tourism), and conversely, transport accessibility determines, to a great extent, the demand for a tourism destination.

The specialist can analyze air transport through several lenses. First of all, it could be considered a separate industry and a sub-sector of the transportation industry. It could explore in the contexts of cargo or passenger aviation, military, and general aviation. Usually, the development of air transport reference to:

- Aircraft characteristics (design, engines, the ability for long-range distance, speed, and maneuverability, aircraft materials),

· Aircraft safety (critical to promote passenger transport),

· Air transport operations, wildly Air Traffic Control.

· Development of civil transport operation airlines and airports.

. Regulation and standardization of the sector

3.1.1. Global Transport Network

Since the regions of industry and developed countries occupy their places in the northern hemisphere, particularly on the North Atlantic shore, we find that the most intense aviation movement extends between Europe and North America. Three-quarters of the world's airlines and air traffic mostly occurred between Europe and North America, and within Europe and North America, and this is the same as the scope of intense interaction in maritime transport and land transportation (compare Fig 3 and 4).

Democratic Arab Center For Strategic, Political & Economic Studies
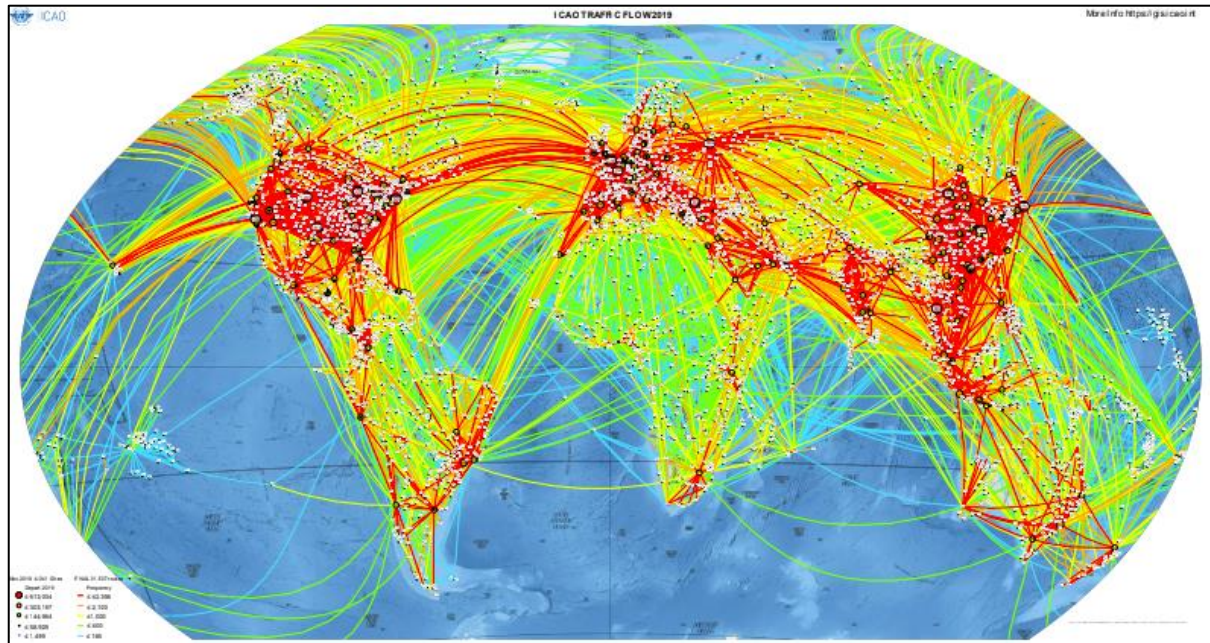
Figure (3): Global air navigation map (ICAO, n.d.)

Figure (4): Global Maritime ship map (shipmap, n.d.)

 The similarity traced between pattern and extent of the significant axes of sea and air transport ensures that the movement lines in each of the two means. For example, the leading airline

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from Europe through the Middle East to India and the Far East, which almost follows the same extension of the maritime line in this direction, and repeating the same image from tracking airlines and maritime navigation between Europe or North America and between South America or South Africa, and this similarity the trends of these two means of transportation are due to one reason: the link between the two northern continents on the one hand and the world of the Indian Ocean, the Far East and the South Atlantic on the other hand, as two distinct regions in forms of production and economically complementary by linking them together through different transport bridges.

For this reason, we do not find a significant change in the shape of the air network from the period between the two world wars to the present day. The base of economic conditions the airline trends in the 1930s still exists without any qualitative change. As mentioned earlier, the intensification movement and the same trends in the 1960s have confirmed the economic integration strength between the regions.

Moreover, if the general shape of international airlines did not notice a significant change, then the opposite happened in the internal lines of different countries, with the emergence of new investment places and new marketing centers, in addition to the emergence of the importance of the aircraft as the most reliable means of transportation in terms of time, and the growth of the spirit of rapid movement between people and men Business. The condensation of internal air transport is evident in countries with large areas, led by the United States, Canada, the Soviet Union, Brazil, and Australia. It could also apply to the European Common Market countries if we consider them a single terrestrial unit.

The air transport industry's primary task and its link with the tourism sector are passenger and goods transport and the different services that intertwine. Forms and patterns of organizing the air transport industry may differ in terms of the economic, social, political point of view, the conditions of the surrounding environment, the size of the market, and therefore the main elements in linking that industry together by:

1- International recommendations and agreements issued by international aviation organizations, regional industry alliances

2- Aircraft manufacturing

3- The primary intention to provide services

4- The administrative bodies of the civil aviation sector and the laws regulating them

5- Financial support to the industry through national, regional, and international institutions

The rest of the aviation industry participants are depicted by the external stakeholders, each with their particular impact on the core operation. The model implies that aircraft

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manufacturers, ATM companies, and airports take the role of facilitators and exist only because of the airlines and the need for air transportation service providers, although all of them are directly connecting to air transportation. The airlines have a leading role, leaving more secondary roles for the other participants. In this way, the ground handlers, aircraft manufacturers, national governments and institutions, air navigation services are considered external for aviation. Although their impact is essential, they remain outside of the core supply chain relationship: Airlines-Distributors-Customers. The model's most important contribution stems from its focus on the air sector's primary function, while most of the stakeholders are either centrally or peripherally depicted.
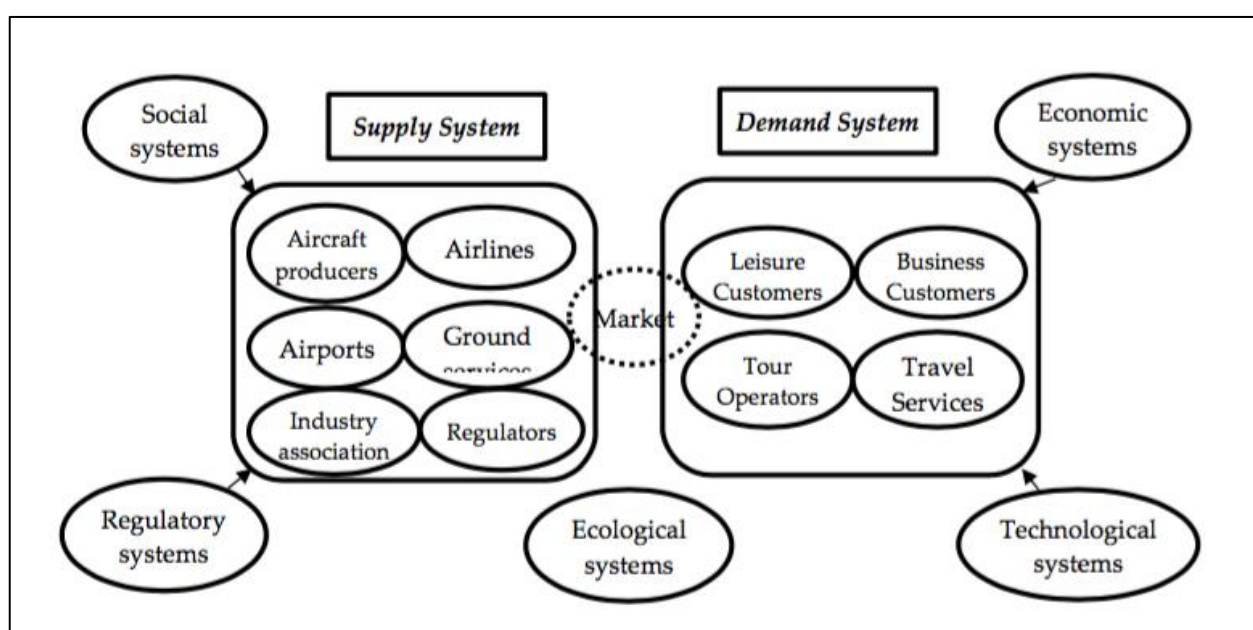
Figure (5): Aviation systems (Wittmer, n.d.)

The model created by Bieger and Wittmer (See Figure 5) depicts the air transport system above in a classic supply and demand format. The author's initial idea of (see Wittmer and Bieger, 2011a) (Wittmer, n.d.) [25] to present the air transport supply chain has upgraded to that model, we may explore it as the visible and invisible sides of the industry from the customer's perspective. The supply-side encompasses all aviation actors – airlines, airports, aircraft manufacturers, ground operators – and regulators and air alliances, which are organizations not directly involved in transportation but contribute significantly to the industry's smooth operation.

The demand perspective considers the customers, considering them not as pure passengers, but differentiated according to their motivation for travel – business or personal. Additionally,

travel organizers (tour operators) and intermediaries (travel agencies) have included their intermediary connection between the air transport industry and the customers. It is the Market which unifies the Supply and Demand actors and makes the balance between them. Both parties bear the external factors' impact, including political, economic, ecological, social, and technological systems.

This model's most prominent contribution is in presenting the demand perspective, i.e., both the passengers and the significant players from the tourism industry- tour operators and travel agents. Thus, the authors imply the direct connection between air transport and the tourism industry. Another insight of the model concerns the external environment factors (the so-called **PESTEL** factors – **P**olitical, **E**conomic, **S**ocio-cultural, **E**nvironmental, and **L**egal) and their impact on air transport operations. The proposed air transport system's proposed model provides a predominantly static picture, where the focus is on the main participants and the environment in which they operate and where the risks in the workplace will affect workers and customer's connections and relations within the air transport. However, the sector is not isolated; on the contrary, it has roots within most other industrial sectors.

Therefore, for the current study, the air transport analysis will be made in the tourism industry, with the main focus on the sector itself.
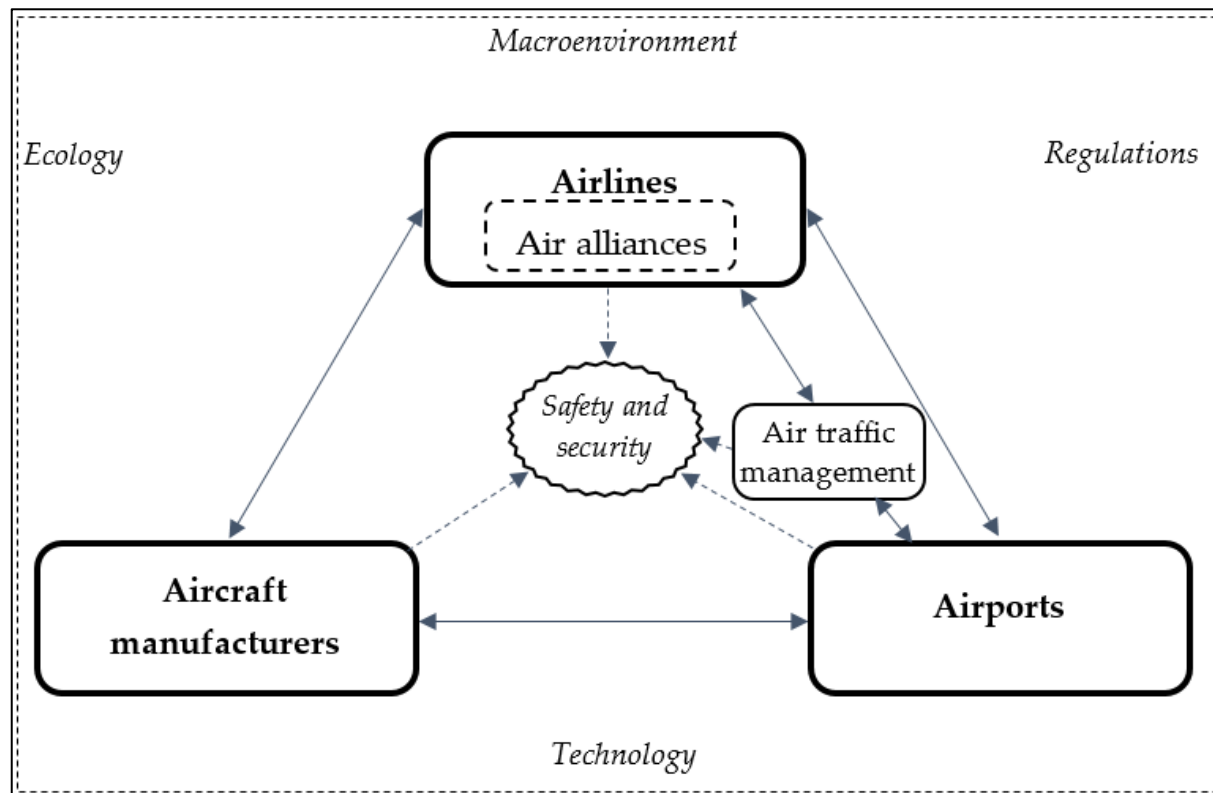
Figure (6): Air transport industry model (Wittmer, n.d.)

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3.1.2 Airlines

Airlines provide the core service for the air transport industry in that they allow passengers to travel from one point to another. Therefore, the airlines' role is crucial for the travel and tourism industries. On a global basis, the number of tourists is growing – from 277 million in 1980 to 528 million in 1995 – and has exceeded 1 billion in the last few years (UNWTO, 2012 Aviation Report) [26] (UNWTO, n.d.). More than half of them use air transport to reach their final destination. In 2015 over 1500 airlines transported 3.5 billion people, with a fleet of 26,000 aircraft, averaging 104,000 flights a day over a global network of 51,000 routes (IATA, 2016, Annual Report 2016) [27] (IATA, n.d.) The volume of operation determines a significant role of airlines for the tourism industry and any other sectors using air transport.

3.1.3 Airports

Airports are the other component of the air transport system, vital for the system's existence. The global increase in air navigation led to the building of airports larger and larger, where the airports are considered stations for the transport of goods and passengers using airplanes through airlines, whether locally or internationally in general, linking the airports' progress in terms of the form of construction and equipment to the technological progress in all fields. Considering that the construction of airports has flourished in the sixties of the twentieth century, to increase the movement of air navigation, as the control towers appeared that provide air navigation services and secure air operations in all its stages, such as Radio stations and radar technologies, meteorological information services for aviation traffic service, firefighting, rescue, and ambulance.

The airports also contain landing and take-off places for aircraft in the air operations area, places for roll-over, and waiting for aircraft to provide logistical services for aircraft accommodation, fuel, food within the flights, maintenance, security, and guarding, customs, health, and veterinary services. See figure (7) Cairo airport chart (HECA, n.d.)

On the other hand, within the airport, there is a place in which passengers are present before the air operations, introducing many services to provide their comfort. The airport may also become an open commercial market without fees or taxes, so the airports have become like a small shopping center, a center for international financial transactions and services vary due to the increase in the world's demand for air travel, the increase in air transport investments and

the economic development of this sector. Air navigation experts always stress that air safety always starts from the airport, and the air safety science, air transport, operation, construction, and design of airports have emphasized the vital role that the airport plays in the transport industry. The airports have become a unique science for them in management sciences and can manage their financial resources and become a facility that feeds itself with the financial resources needed to operate the air navigation.

In general, according to their size and capacity, airports classification by the number of passengers traveled, or by the number of movements (landings and take-offs), also according to their technical features, e.g., by the type of aircraft that could use the airport's runway and facilities. Still, there are numerous other characteristics, like land area, geometrical layout, equipment used, services offered, the intensity of facility utilization, and economic performance, that make every single airport unique worldwide (Odoni, 2009) [28] (Odoni, n.d.).

From the technical perspective, as an air transport infrastructure, the airport has two distinct functional parts: "airside" and "landside," for example, see the airport chart (Jeppesen chart manual, Cairo 2020).
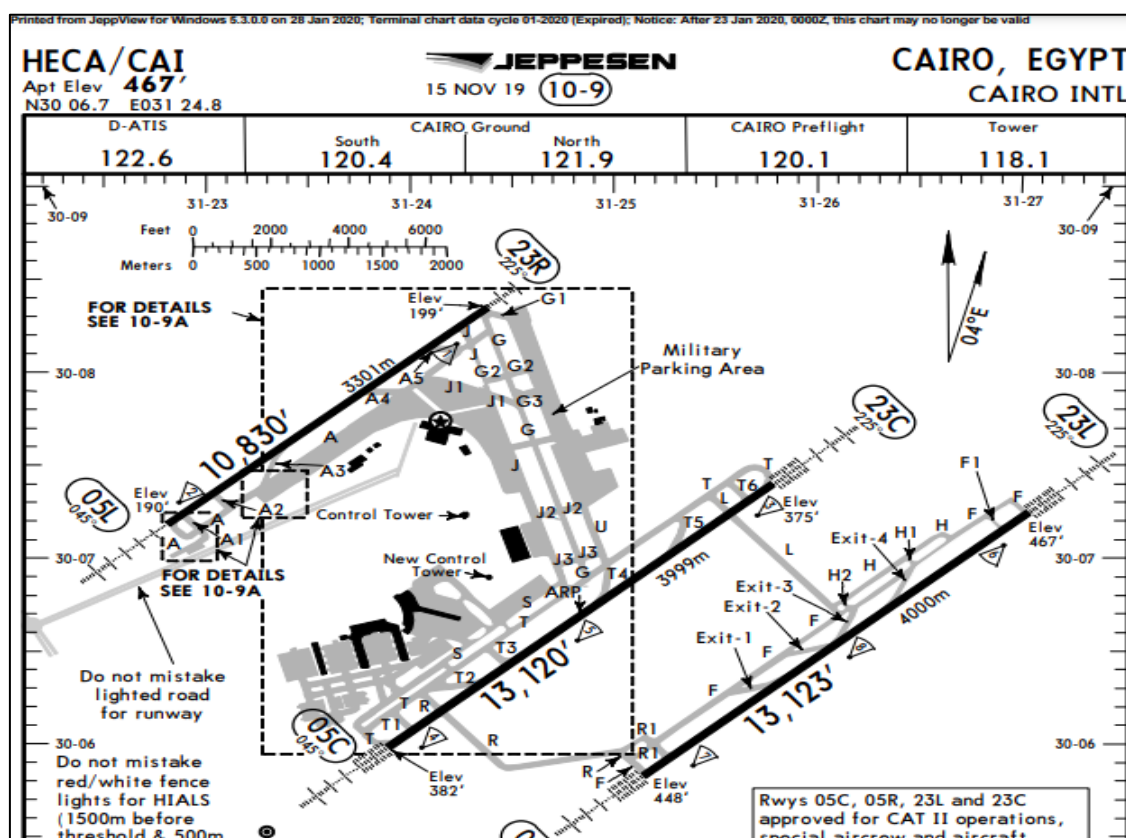
Figure (7) Cairo airport chart (HECA, n.d.)

The airside is attaching to the airports' core function – to serve the aircraft, transporting passengers and cargo to/from the airport. Therefore, on the airside are included runways (for landing and take-off), taxiways (a system of alleys, which allows the aircraft to access the apron and the terminal gates), aprons (the area for parking the aircraft during their downtime) (Schmitt and Gollnick, 2016) [29] (Gollnick, n.d.), aircraft maintenance areas, and air traffic control facilities and equipment, as well as the land that surrounds all of these. The airside typically constitutes 80-95% of the land area of an airport. The geometric configuration depends on the number and location of the runways, relief, and peculiarities. Runways are usually the determinants of the airport's characteristics and capabilities, and their construction follows strict regulatory standards (Odoni, 2009a) [30] (Odoni, n.d.). Other factors influencing the dimensions and capacity of a runway include the aircraft's weight, weather/climate conditions (wind and temperature), airport elevation, and any physical obstacles nearby. (Odoni, 2009) [31] (Odoni, n.d.). Besides, airports may have a different geometric configuration of the runways (parallel or intersected), impacting their capacity and operations.

The "landside" of an airport encompasses the complex of passenger buildings, cargo terminals and other supporting buildings (e.g., airport administration, utility plants, catering facilities, hangars), ground access facilities (access roads, automobile parking areas, other transport stations.), and any additional non-aviation facilities (e.g., hotels, office buildings, shopping areas, event venues.) that located within an airport's boundaries (Odoni, 2009) [32] (Odoni, n.d.). The most imposing part of the landside is the passenger terminal building, where they prepare for their flight.

3.1.4 ATM (Air Traffic Management)

The study of air transport infrastructure cannot be comprehensive without Air Traffic Management (ATM) Air traffic control (ATC), Air navigation services (ANS), and Safety and Security service. However, as they are physically positioned within the airport and are an integral component of the ground infrastructure, we allocate them as sub-divisions of the airport structure.

Air Traffic Control (ATC) plays an essential role in the aviation sector's operations, especially airlines. ATC is in charge of the taxi-out, take-off, landing, and taxi-in procedures of every flight to and from an airport. The ultimate goal of ATC is to ensure the safe and efficient flow of air traffic. Air Traffic Control (ATC), Air Traffic Management (ATM), and Air Navigation Services (ANS).

(CNS) Communication, navigation, and surveillance systems are the fundamental components of ATC, which ensure its efficient operation with aircraft and ATC units to facilitates the air traffic flow in the air and on the ground within the flight information region (FIR). The air traffic controller observes and controls the air traffic situation through a surveillance system. The controller issues command ("clearances") to aircraft through a communication system (most ATC communications take place currently on voice radio channels in the very high-frequency (VHF) band reserved for aviation use), and the aircraft fly the cleared route using a navigation system (ICAO doc 4444,2018). The integration between them requires coordination among the ground authorities within a country and regional and global bases. Other essential technical elements of ATC include flight and weather information systems, which provide pilots and controllers with up-to-date weather conditions information (Hansman and Odoni, 2009) [33] (Odoni, n.d.) The whole system operates under the comprehensive and strict Standard of Operation procedures and rules, set by the ICAO and recognized worldwide (ICAO, 1984). Another specific feature of ATC is that it is currently almost an entirely human-centered

process, in which flight crew and ground controllers communicate on navigation issues (Hansman and Odoni, 2009) [34] (Odoni, n.d.). Given the latest technological advancements, some activities would eventually become wholly or partially robotized (ICAO, 2011).

Overall, air traffic management plays a vital role in the air transport system in multiple aspects. Still, the global efficiency evaluation stipulates improvement of current ATM because of increased traffic, capacity constraints, and pressing environmental concerns. The new reality demands a more innovative and complex approach, encompassing more than a single country terrain. Therefore, ATM advances affect many more stakeholders' interests than those connected with aviation: governments, international institutions, environmental organizations, local communities, and, ultimately, ordinary people looking for safe and efficient travel.

3.1.5 The global Environment of Air Transport

Air transport is by default an international industry due to flights' nature, which often flies trans-border. Consequently, the industry's smooth development requires internationally recognized rules, mutually agreed upon by all countries and participants involved. The need for transnational negotiations and contracts implies the strong connection between aviation and political structures. Besides being a complex system, global aviation needs synchronized standards to function optimally (IATA, 2016). In this regard, the regulatory and legal framework appears as a primary layer of the air transport environment.

The most severe and successful initiative was the Chicago Convention (1944) and the internationally recognized civil aviation legal framework. The concept of "Freedoms of the Air" covers multiple situations regarding the rights an airline may have regarding its state and other states. The five initial freedoms are expanding to the current nine. At the Chicago Convention, the participating states created a current universal set of rules regarding bilateral and multilateral agreements as instruments for regulating transportation services by air (Odoni, 2009b) [35] (Odoni, n.d.).

Another significant contribution of the Chicago Convention was the recommendation for a permanent international organization which should ensure worldwide recognized rules for air transport operations procedures, control facilities, safety, and security equipment, and the International Civil Aviation Organization (ICAO) was the result (Odoni, 2009b) [36] (Odoni, n.d.). The ICAO adopts standards and policies to ensure safety and efficiency in the civil aviation sector. As such, ICAO appears as a public intergovernmental body of air transport regulation. The recommended standards and practices, elaborated by ICAO on their annual

general assembly meetings, become mandatory when a particular state emphasizes them. The Chicago Convention established the technical and legal framework for international air services operation, while the economic regulations were left to develop through bilateral interstate agreements and inter-airline agreements. (ICAO Chicago convention, 1944).

Many other conventions followed during the years (Hague Protocol, Montreal Convention, Geneva Convention, Tokyo Convention.), each of them adding to the necessary air regulations [37] (UNWTO, n.d.)

Another significant body of civil aviation is the International Air Transport Association (IATA), which represents the world's airlines. Today more than 83% of all international airlines are members of IATA. The efforts of IATA directing towards supporting aviation's economic interests. IATA makes considerable contributions for setting tariff procedures and airfare construction, a vital input to the development of Conditions of Carriage, the legal contract between the airline and the passenger. Airfares' coherent pattern enabled airlines to accept each other's tickets on multi-sector journeys (IATA, Early days). Comparing ICAO and IATA, the former has more legislative and political character/power, whereas the latter is dedicating to balancing the professionals' interests within the sector.

Other similar organizations such as the European Commission, Airports Council International (ACI), world aviation services, Civil Air Navigation System Organization (CANSO) offering a forum on which members can exchange information. These institutions lobby other stakeholders in the entire aviation industry for their members' interests [38] (ICAO, n.d.)

The air regulation is executing on three levels: the national or governmental level, which is the lowest one and at which laws and regulations set that are particular for that country; the bilateral level, between two states or a supra-national representative of several countries; and, the multilateral level at which regulations are undertaken jointly by three or more states within the framework of an international organization, or multilateral treaty (ICAO, 2004).

The highest level of regulating agreements is multilateral regulation. At least three or more states implement it within the framework of an international organization, and it may appear in the form of a multilateral treaty (ICAO, 2004). The main focus of multilateral agreements is on providing a general framework of air law regulations, which serve as a basis for further bilateral and regional agreements. However, in the age of increasing regionalism and globalization, multilateral regulation currently steps forward to a higher level. Further and new air rules are to be expected (ICAO, 2004). Emblematic examples of multilateral agreements include the Chicago Convention, Warsaw Convention, European bodies for air regulation. Also, ICAO itself is an active entity that continues to provide air legislation worldwide.

Multilateral agreements are signing between different parties, including states and airlines and other companies, organizations, and institutions that have a stake in air transportation.

3.2. Integration between air safety and occupational safety

Civil aviation pays excellent attention to air safety, as it is the most crucial air transport industry axis. The concept of air safety extends a system and system to cover work fields, including workers, tools, and mechanisms. However, the concept of airport safety focuses on the airside without losing sight of the importance of the ground side, and the concept of occupational safety comes to be more focused on the ground side without losing sight of the importance of the airside.

Therefore, the concept, tools, and air and professional safety mechanisms can be considered one concept of care and social care. However, both follow methods that are sometimes parallel and sometimes meet in a network of interrelated and relationships that provide opportunities. Coordination and cooperation without conflict or difference incompatibility and complementarity are significant, extending to include the air transport industry elements, sectors, and activities related to travelers, workers, and work environments in aircraft and airports or maintenance workshops, industries, offices, halls, and projects. It also extends to intensive care and health care, training, safety, quality, environment, security, civil defense, firefighting, contingency plans, and social and cultural services towards enhancing safety.

3.2.1 Air safety

The development of the air transport industry was accompanied by technical and administrative progress by a significant risk management development, which led to a marked improvement in safety rates. The air transport industry's interest in aviation safety is due to two important matters, the first of which is the human value, the most important and most important. The second is the costs of accidents and incidents, and that is that despite the insurance coverage of all accidents and dangers, the implications of shaking confidence remain without limits, as they strike hard in the balance of achievements in public opinion. The consequences remain for an extended period, achieving significant losses that may bring down airlines, departments, and managers.

The work environment's interest includes interest and a commitment to the safety and security requirements of work sites such as the airstrip, halls, offices, centers, stores, and workshops. This interest is due to a greater interest in the work and employment axis. However, it is the human being in all functional and professional sites that maintains his health and provides the work system with the highest levels of performance and giving, and it reduces accidents and incidents to the lowest rates, thus preserving the character and reputation of air transport as the most attractive and safe means of transport.

The air transport industry has a distinct safety balance. Assuming that if a passenger is traveling by air every day, it is not expecting that he will meet an air accident 30 thousand years ago, and according to one of the accident insurance standards, the number of deaths per billion km comes air transport in the first place with several 0.05, Then buses 0.4, then rail 0.6. [39] (Wikipedia, n.d.).

3.2.2. ICAO State Safety Programme (SSP)

State Safety Programme (SSP is an integrated set of regulations and activities aimed at improving safety. Also, it is a management system for the administration of safety by the State and agreed by all ICAO members around the globe. According to, the concept of Safety ICAO Doc 9859: Safety is the state in which the possibility of harm to persons or property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management. State Safety Programme (SSP) more than a platform for the State to apply the two basic safety management principles throughout its civil aviation organizations:

– Safety Risk Management (SRM)

– Safety Assurance (SA).

By this framework, that allows the State safety oversight authority and service providers to interact more effectively in the resolution of safety concerns. According to ICAO Requirement (Annex 19) States shall establish a State Safety Programme (SSP), in order to achieve an Acceptable Level of Safety Performance (ALOSP) in civil aviation. SSP provides the means to combine prescriptive and performance-based approaches to:

1. Safety rulemaking

2. Safety policy development

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3. Safety oversight.

Basically, the role of the members Civil Aviation Authorities have to act regarding to safety actives and as follow:

1. Safety rulemaking – Based on comprehensive analyses of the State's aviation system

2. Safety policies – Developed based on hazard identification and safety risk management

3. Safety oversight – Focused towards the areas of significant safety concerns or higher safety risks.

The following four components of the SSP framework were elevated to the status of Standard in Annex 19:

1. State Safety Policy and Objectives

2. State Safety Risk Management

3. State Safety Assurance

4. State Safety Promotion

3.2.3 ICAO Safety Management Systems (SMS)

The SMS is a systematic approach to managing safety, including the organizational structures, accountabilities, policies and procedures. SMS State Requirement that a service provider implement the SMS acceptable to the State that identifies safety hazards and to ensures the implementation of remedial action necessary to maintain agreed safety performance, provides for continuous monitoring and regular assessment of the safety performance and to aims at a continuous improvement of the overall performance of the safety management system. (ICAO annex 19, 2018) *[1]

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*All ICAO Conventions and Annexes are presented in Appendices' pages

CHAPTER FOUR

COVID-19 is Changing Aviation Workplace

4.1 Global data

The COVID-19 began in Wuhan, Hubei Province, China. Residents who lived in Wuhan had some links to large seafood and live animal markets, which suggest that the transmission of Coronavirus was from animal to person. The virus has to name "SARS-CoV-2," and the disease it causes has named "coronavirus disease 2019" (abbreviated "Covid-19"). The first known patient of Coronavirus started experiencing symptoms in Wuhan, China, on 1 December 2019. Since then, there have been over 62 million reported cases around the world till now. Some global statistics reported in the table [40] (WHO, n.d.)

Table: Covid-19 statistics (as on November 23, 2020)			
Countries	Confirmed cases (Total)	Confirmed deaths (Total)	Recovery cases (Total)
Global	59,289,669	1,399,334	41,003,658
US	12,621,696	262,846	7,461,406
Italy	1,431,795	50,453	584,493
China	86,442	4,634	81,493
Iran	866,821	45,255	610,406
Spain	1,606,905	43,131	N/A
Germany	939,314	14,428	618,800
UK	1,527,495	55,230	N/A
Egypt	113,027	6,548	101,881

Table (2) Covid-19 statistics. Source world meter: Note that there may be unconfirmed cases which were never reported to the public health authorities. (meter, n.d.)

 By April 30, 2020, 212 countries, territories and regions had reported cases of COVID-19, and 174 reported at least one death from COVID-19. In total, there are 14,648,444 injuries and 609,008 deaths reported till July 2020. COVID-19 spread to continents except for Antarctica. Fewer than 30 countries or regions (mostly in the Pacific Islands) have reported

cases of COVID-19. Different regions were disproportionately affected by COVID-19 [41].
(WHO, n.d.)

WHO is examining the relationship between COVID-19 data and the self-reported preparedness of countries that have measured through the ability of the International Health Regulations (IHR) and preparedness for health emergencies to understand the weakness of the current public health system in addressing public health events and risks, and to assess and close gaps to reduce the risk of epidemics in the future. Although COVID-19 appears to peak in some countries, the second wave of infection is observed by experts in some places, and cases are still increasing rapidly in many other countries.

The response to this crisis must be data-driven, and collecting and analyzing can be a considerable task for countries. The difficulty has further amplified to treat the vast mass of information generated by the rapid scientific developments that combine new data and analytical challenges to enrich the required procedures. WHO is actively supporting countries to increase their capacity to produce real-time, reliable, accessible, and achievable data [41].
(WHO, n.d.)

4.1.1. Egyptian Civil Aviation Authority (ECAA) Safety Information:

The Egyptian Aviation Authority has started taking the necessary measures since the beginning of March 2020 and by the state's directives to set precautionary measures to confront the spread of the Coronavirus (COVID-19) and to follow public health instructions and to preserve the safety of operation and ensure that it will not affect the provision of air navigation services in the Arab Republic of Egypt. through adherence to the internal procedures to reassess human resources, as well as to activate the plan for periodic and preventive maintenance of all navigational devices and to provide the Ministry of Civil Aviation in Egypt as well as the aviation authority and all its management with any impact on the air navigation services in the Egyptian airspace as a result of the spread of the newCorona epidemic.

Under the scientific approach to crisis and disaster management, the different departments prepare a study to assess the risks and manage the variables (management of change) for any differences that occur. Besides, applying safety management principles in force to support decision-making, arranging decisions and priorities, and preparing general policies for professional health and safety. Workers at the sector level, it is noteworthy that the Civil Aviation Authority works in harmony with the recommendations of the World Civil Aviation

Organization takes it upon itself to update an emergency response plan following the recommendations and advisory bulletins of the international organization and in line with the spread of the Corona, epidemic to ensure the safe operation of air navigation services in The Egyptian airspace.

The authority notifies it of any differences from those stipulated in the annexes of the Chicago Convention on International Civil Aviation, in line with (Article 38) of the Chicago Convention (see the text of the agreement in the appendix.)

The Egyptian aviation authority Ensure the continuous provision of the following air navigation services, at least:

- Keep the availability of communications, navigation, and surveillance.
- Keep providing the services of (Communication, Navigation, Surveillance) services.
- Keep the availability of air traffic control (ATC) services and management, the air navigation services (ANS) provision, meteorological offices.
- Contingency planning affecting operations (airspace limitations, Status of ATC unit/facilities (Availability, limited time of operations, change or transfer of units/facilities).

The Egyptian Aviation Authority has been concerned with educating unit employees about the personal hygiene procedures stipulated by the World Health Organization, with the need to educate workers about the nature of the disease and how it is transmitted.

Ministry of aviation also keeps following health guidelines to avoid infection with the virus, such as preventing handshaking and contacting, the necessity of frequent hand washing, and the provision of disinfectants for personal sterilization, medical masks, and sterile tissues at the workplace.

Moreover, keep alerting the personnel working in the different units when one of them feels fatigued, high temperature, or other symptoms of the disease, to report immediately to the competent department, provided that he directed to the specialized medical unit and obtain a statement of his freedom from the disease before returning to the units again, and urging each. The departments to create digital circulation models to spread awareness among workers about these procedures, as well as the signs that include social distancing measures, and they also stressed the need to disinfect equipment, devices, and tools of everyday use among workers after each handover or delivery of work within the units.

On the one hand, the use of communication devices frequently used in the air navigation sector, particularly the authority, stressed the need to provide headphones and mics for working inside the units for each individual separately (personal use) and prevent their circulation. Provide

personal protective equipment for individuals, especially those who have contact with the public (PPE), to ensure that they are less exposed to the virus, with regular periodic check-ups for individuals working in the units for each shift before their work begins. The provision of an appropriate room to place the suspected cases (if any) until the necessary measures taking by the concerned authorities.

On the other hand, it is necessary to form an emergency team of individuals working in the units (with each specialization) to seek help when needed, taking into account the speed of response and presence, in addition to that all notification. The departments should take any precautionary measures or emergency or alternative plans (stipulated in approved emergency and alternative operating plans) that any appropriate administration may deem for the safety of operation and the personnel working in the units, and provide a degree of flexibility if the viability of a primary operating site is lost, the operating plan is activated.

 Alternatively, take the necessary measures to sterilize and restore the leading site's viability for operation [42]. (Aviation, n.d.)

4.1.2 Civil aviation efforts to minimize impact in the workplace

To prevent and control aircraft, airports, air traffic control, and disposal facilities by the principle of targeted and detailed prevention and control measures, multi-level authorities, facilities containment of air transport carried out. Meanwhile, to further improve the requirements for the prevention and personal protection of crew members, maintenance personnel, and cleaning personnel, improve environmental hygiene, disinfection, and maintenance requirements for aircraft and any aviation workers. The aviation sector adopts this standard to administer it as follows:

a- Force reduction management.

b- Reallocate work periods for employees during the working day or for those who work around the clock under the national ban when necessary.

c- checking the personnel temperature at entry doors

d- personal hygiene guidelines

e- use of personal protective equipment

f- workplace disinfection for aircraft disinfection

4.2. Egyptian government response

Egyptian prime minister decided to reduce the number of employees in government departments and agencies as part of Egypt's precautionary measures to prevent the new Coronavirus spread. The decision is the employees working in the Egyptian administration units from the ministries, government administration organs, local administrations of workers, public sector companies, and public business sector companies, and the authority has jurisdiction in each of these. Authorities to issue any decisions that are not required to protect its employees and those who are reluctant to any possible repercussions of the new coronary virus. The decision excludes workers who work in essential services determined by the competent authority in each level, such as "transportation, ambulance services, hospitals, and water, sanitation and electricity services.

These facilities are regulated by following the rules see in the public interest, and take precautions with the new Coronavirus [43] (Independent, n.d.)

4.2.1 Egypt facing COVID 19

Urgent Actions and Plans and Refuting the Rumors. Article Two of the resolution stipulates that those subject to the provisions of this resolution are allowed to work from home if possible or head to the workplace alternately on a daily or weekly basis, depending on work needs (resolution 719,2020).

Also, employees who suffer from any chronic diseases such as diabetes, high pressure, kidney disease, liver disease, heart disease, and oncology will be granted exceptional leave throughout this decision's validity. The employee with chronic diseases was granted exceptional leave by the government. Employees who called sick leave for the period specified by the competent medical authority, a pregnant employee caring for one or more children under the age of twelve also that the employer returning from outside the country will be granted exceptional leave for fifteen days starting from the date of his return to the country [44] (Independent, n.d.).

The sixth article prohibits training or attending workshops for the duration of this decision's validity, which suspends all training programs currently in effect. Article 7 of the decision also states that everyone subject to this decision is prohibited from traveling on business assignments or attending training or training outside the country, except in cases of necessity

determined by the competent authority to obtain a permit, by work requirements and the public interest.

Article 8 stipulated that all units of the Egyptian administrative apparatus, public sector companies, and public business sector companies take the necessary measures to purify, clean, and sterilize workplaces according to what the Ministry of Health and Population issued in this regard.

Article 9 stipulates that the leaves granted under this decision must count, and not counted as part of the leaves legally stipulated or as financial dues for the worker. Finally, Article 10 of the Resolution stipulates that this decision shall publish in the Official Gazette, and it shall be enforced for fifteen days starting from the day following the date of its publication, and all competent authorities shall implement it.

 It is noteworthy that the Egyptian government directed to suspend the study in schools and universities and to cancel any gatherings, as part of the preventive measures taken by Egypt, to prevent the spread of the new coronavirus (see appendix 1)

4.3. Analyzing the Business Risks (Risk Assessment)

The Egyptian civil aviation authorities began to assess the risks of various work sites in the sector through the risk analysis system. They crossed through an interview with the general director of central administration for air navigation safety standards [*] (Abde, 2020). Captain Tayseer Abdel Karim, where he said, "It is A system that helps to enter and apply OSH principles in production processes, and it has done by examining each step of the work done to identify risks associated with each step and determine the best way to control and prevent these risks.

Captain / Tayseer believes, "The levels of risk control currently are that Between 4 and 30 cases out of every 950 cases of coronavirus will end in death, and the best death rate estimate is the death of nine people out of every 950 cases, or about 0.5 percent of them, as reported in WHO reports, which may affect resources Mankind in this sector.

Captain continued his speech by saying: "There are many factors that depend on the severity of infection with the virus workers, which are: age, gender, the general condition of employee health and the health system." He continued," There are and the risks of exposure to infection where the transmission methods have not yet determined as a certainty and that everything

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issued by the health organization the global research and experience is Except and mortality variances in separate locations are unlikely to be due to different strains of the virus." He added that the matter might differ when several workers at the airport and airstrips more than those in the regions where the flight crew, pilots, hospitality, and security personnel meet. Here it should be noted that this is the difference in the ability of different aviation authorities in cooperation with the ministries of national health on discovering more moderate cases of staff that are more difficult.

On the other hand, the WHO stated in its report, "In the first extensive analysis of more than 44,000 cases in China, the death rate was ten times higher among older people compared to middle-aged people, and it was the lowest death rates among people who reached the age of thirty, and there were eight deaths among every 4,500 cases. At least five times, among people with diabetes, high blood pressure, or heart problems, the number of deaths among men was higher than for women. All of these factors intertwined each other, yet do not get a complete picture of the potential death that every group of people everywhere works in the fallen sector faces because of the diverse nature of the workforce in terms of gender, age, type of work, and chronic diseases that exist for some workers.

The Egyptian aviation sector is making significant efforts to remove the danger and make it non-existent. However, in the presence of the enemy COVID-19, it became challenging, as the Egyptian authorities realized that removing this may require infection, scientific and practical issues complicated for the sector. While many drugs are currently tested worldwide by medicine labs, there is currently no evidence that hydroxychloroquine, for example, or any other drug that may treat or protect against Covid-19, is not currently licensed to treat Covid-19 disease or prevention. On the other hand, The World Health Organization stated that "anti-pneumonia vaccines, such as the pneumococcal vaccine and the Heroisms influenza type B vaccine, do not protect against emerging coronaviruses." This virus is entirely new and different and needs its vaccine.

Researchers are working on a new Coronavirus-2019 vaccine, and WHO is supporting these efforts. Reducing the importance of the main factors to reduce the size of risks and limit their spread are vital factors to avoid workplace risks. There are no other aviation sector opportunities that a worker can only prevent this risk with some healthy practices to protect against infection as a benefit. When cleaning hands with soap and water or rubbing them with an alcohol antiseptic would kill viruses that may be on hands and make sure mouth and nose are covered by bending the elbow or tissues while coughing or sneezing, get rid of the tissue

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immediately by throwing it in closed trash and cleaning hands with an alcohol disinfectant or with soap and water. It may become impossible when given to workers in the sector where teamwork is the foundation of success.

For example, it is complicated to avoid getting too close to workers and consumers and keeping a safe distance of at least one meter (3 feet) between you and anyone who coughs or sneezes but limits transmission risk. If the hands or arms are contaminated, they may transmit the virus to the eyes, nose, or mouth. The virus can invade the body through these instances and infect the worker with the disease, especially while working or mixing with family members and friends outside of the work area. Recently, The World Health Organization also stated that "respiratory viruses can be transmitted by shaking hands and touching eyes, nose, and mouth." It also states that by greeting, waving remotely, gesture, or kneeling instead of shaking hands. A safe greeting includes waving, gestures, bending, and wearing rubber gloves in public, useful in preventing emerging coronavirus infection.

The organization also urged using a dilute chlorine solution (0.05 percent) to sterilize hands when there is no alcohol-free hand sanitizer or soap available. However, using dilute chlorine solution when the health department does not recommend alcohol, soap and water are available, as this carries a greater risk of hand allergy and other health damages due to the preparation and dilution of chlorine solutions.

Besides, chlorine solutions must be prepared daily and stored in a dry and cool place in tightly closed packages out of sunlight. However, chlorine is an effective disinfectant for cleaning in the workplace (at a concentration level of 0.05%) if used after cleaning with soap and water.

Aviation authorities have moved quickly to isolate suspected infections, as isolation is one of the fundamental principles of occupational health and safety issues in light of the spread of infection as a feature COVID-19 and the recognition of a direct threat to workers in the sector as well as travelers and retail workers dealing with the entire civil aviation sector. Unfortunately, people resisted heavily in its blockade, isolated, and reduced workers' exposure to it. The government began to grant some duties, such as measuring workers' temperature, including the civil aviation sector, to limit the spread of the virus.

In addition to isolating the infected, the Ministry of health facilities provided medical isolation services to civil aviation workers after informing the Egyptian Ministry of Health of this matter, as it ordered the suspect to perform quarantine for 14 days to ensure their safety while monitoring these individuals remotely through their voice phones to ensure their commitment Quarantine. Currently, authorities maintain risks in their size and duration, but they are

monitored and warned through medical and administrative controls, and no data is currently available on the degree of persistence of coronavirus emerging on the surfaces.

Additionally, the (WHO) scientists talked about the possibility of airborne transmission and aerosol transmission from large respiratory droplets from sick person cough or sneeze. Data from laboratory studies on acute respiratory syndrome (ARV) and coronavirus that cause respiratory syndrome (MEA) have shown that the degree of virus persistence in the environment depends on several factors, including relative temperature, humidity, and surface type. Connected devices will continue to monitor evidence on the emerging coronavirus and provide the most recent information as soon as this evidence is available [45] (WHO, n.d.).

The World Health Organization has called for the wearing of Covid-19 protective equipment for workers in various industrial sectors. In another context, the International Civil Aviation Organization has modified these recommendations to protect workers in the civil aviation sector and with the aviation authorities. Worldwide Personal Protection Equipment (PPE) should be used by civil aviation anxiety while performing their duties.

Discipline even though most countries have tried several exceptional strict and unprecedented measures in an attempt to contain the spread of emerging coronaviruses or Covid-19, such as border closures, curfews, study stops, and group bans; However, it feared that these measures alone would not be sufficient to counteract the spread of the virus [46]. (WHO, n.d.)

4.4 Mental health in the workplace

The risk from any disease has rarely occupied so much of our thinking and attention. For several weeks, almost all of the world's newspapers publish detailed news and reports on their front pages' Coronavirus epidemic. Radio and television stations devote most of their coverage to the latest developments in the spread of the epidemic and the number of injured and victims.

 Social media platforms are also full of scary statistics, practical advice, or black comedy.

 This constant torrent of news about this epidemic may increase anxiety and thus affect our mental health. However, a constant feeling of threat may have other, more dire effects on our psychological state.

 In light of some change and development in our responses to disease, our fear of infection may lead us to become more in line with prevailing norms, to behave like the rest of the group, and

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less accepting of outwardness from the norm, as our moral judgments and our social attitudes more conservative when considering issues such as immigration or sexual freedom and equality.

 As a result, several mental illnesses related to work and employment problems may arise, and there is a theoretical possibility that these psychological problems will worsen as a result of the spread of the Coronavirus epidemic, in a large proportion compared to previous years, and this is due to the insecurity of job loss as a result of the economic recession in the sector. Working as a pilot or air traffic controller may lead to a lot of stress and tension, increasing the rate of anxiety, depression diseases that may lead to suicide and death, some significant diseases such as heart, diabetes, stress, and others. The occupational health and safety specialists in the sector may advise some to resort immediately to the psychiatrist clinic to follow the case at its beginning and change mechanism of some workplaces, in the interest of the employee to increase his productivity and provide means of safety. However, an apparent contradiction that works in the public sector constitutes more safety for its workers, but it harms the labor market with a lack of competition, distinction, and a decline in performance.

From practical experience, more people with the psychological distress practice medicine, journalism, law, military, aviation professions, and stock exchange and bank employees. On the other hand, for example, the service employees may suffer from psychological pressure and depression, amounting to intense crying. As a result of responsibility and insecurity, which sometimes leads to severe panic attacks due to high anxiety, and the most prominent of these jobs are air traffic controllers, pilots, and air hospitality, due to work pressure, responsibilities and lack of material appreciation, especially the young ones.

They stress that the work environment requires an urgent change to increase production in the presence of fear and anxiety of contracting an illness or dispensing with their services. These factors may lead to a loss of security with fear of each individual that his colleague seeks to support him and take his place.

In addition to that, work must be the employee's priority during his term, no slowdown in his performance and set priorities every day, to avoid accountability. Safety is the essential stage of the psychological pyramid, and losing it means the collapse of everything and waiting for a salary every first month in itself pressure in light of high levels of inflation, price increases, and weak salaries that can lead to death. Safety is the basis of the psychological pyramid, followed by the basic needs of food and drink and others, so safety is number one, followed by other needs, then the responsibility of a person for himself, then a group of people, and a sense

of comfort, happiness, and creativity in his work, up to a high degree of feeling that makes him reconcile with the entire universe.

The safety stage is the most important thing. If it is lost, an imbalance will occur that will lead to many psychological problems, and for the job it is related to safety because it achieves a steady income that represents the budget of a house, but at the same time, it represents terrible pressure everywhere, and it is not here in Egypt only with differences.

Waiting for the salary every first month in itself is pressure due to the life of installments and debts. Looking at divorce cases, most of them may be due to financial problems, and they are at the top of the list of pressures and represent a massive burden on their owners, and the evidence is that all well-off people have a stable life to some extent. Moreover, some large companies resort to the idea of reducing employment in order to increase their shares and obtain additional gains that affect workers after their livelihoods are interrupted, as they suffer from mental illnesses, and there are vivid models.

On the other hand, people are more vulnerable to psychological pressure who work outside their field of studies, such as law, trade graduates, and handicraftsmen, because they lack government jobs and are dependent on contract or day. In addition to new graduates and their transfer between more than one job, which leads them to insecurity, and thus their productivity will decrease. Furthermore, a state of paralysis and severe stress occurs because it will affect his health and expose him to some diseases such as heart, diabetes, pressure, and arteriosclerosis. After all, it is a circle connected in the human body and the consumption of energy reserves inside, leading to death.

The term safety Employment is related to material security that some people have lost due to the spread of unemployment and poverty, and the spread of the Corona epidemic increases it. All of which are factors that lead to depression, which results in stress that makes the person lose the ability to work, which exposes him to job loss and a strike in the work environment because most of the private sector did not recognize mental illness, and he does not have health insurance. Although being on top of the job, the patient cannot prove that he is ill and exposed to the most significant loss because of the strong disturbances. In addition to that, mental illnesses are costly to treat, and therefore not accessible to everyone, especially those with low incomes, so they represent a financial burden that the employee is unable to bear.

From here, the state must take this into account and secure the employee, and away from the idea of direct dismissal, leave him for at least two months to find an alternative job that guarantees him a decent life instead of suddenly cutting off his income and displacing him.

Creating an environment for recovery and psychological rehabilitation supports the person and achieves the appropriate safety to perform inappropriate conditions with appropriate capabilities, which is difficult to happen in crisis times. Some people lack the culture of dealing with stress and need a specialist to consult them from time to time.

There are no clear reasons to avoid losing job security, but the person must ensure not exposing himself to any pressure or threat to develop himself all the time, renew his skills, and refine them. In addition to that, the disease fear of losing a job may have a genetic predisposition. It varies from person to person. Indeed, safety stems from within and not from a job or any other feature that does not have a specific form, but instead comes with training, and whoever seeks satisfaction and adaptation will find it if he is sincere in intention and will deal with any pressure and under any circumstances and bypass it without affecting him in any way. He has to prepare himself for the labor market, accept himself as it is, adapt to his potential and current situation, and be always thankful.

The idea of job security that a large group of people lost within their work institutions. There is a belief that security is always in the state's jobs because its employee is under the umbrella of insurance, and his management will not be able to dispense with him. Unlike the private sector in which the employee finds his soul suddenly cut off from his work and without insurance for his livelihood, government work is stable and steady. That this is a double-edged sword because the increased safety in the public sector and government leads to deterioration of work, employee's feeling of complete safety, and that no person is threatening his place, which leads to his lack of performance at work and the corruption of his work environment after a while. He may not also need to acquire new skills, training, or a change in the work environment that may require working during crises, and in light of the government's weak salaries, work is limited, and production is little, unlike the private sector employee.

CHAPTER FIVE

The impact of coronavirus on aviation sector workers and leadership survey analysis

5.1 Survey study

The aviation sector in Egypt is witnessing significant procedures and also changing the form of work. It has become necessary to study the relationship of employees affected by administrative decisions to lead the institution well before making any decisions to return to the biological activity of the sector, to identify anxiety and fear of working conditions with the spread of the pandemic virus as it is negatively affecting performance indicators and work to meet these needs and desires as appropriate. Workers do not accept any restriction or even limitation regarding safety measures; on the other hand, and they concern for their safety during work and about their own life. These concerns reflect on their performance in the workplace leading to raising a lot of fears and worries. For example, they look for the most significant possible benefits and the least possible harm from this crisis to reach their continued bid's highest value. The study is considered an attempt to help make the correct administrative decisions, which reduces the potential risks previously analyzed in the previous section and enables the administrative leaders in the aviation sector to maintain the current workers and ensure their continuity in work.

5.1.1 Survey study concept

Studying the survey form is a process of gathering, analyzing, and interpreting information about the opinion of aviation workers, and taking advantage of this information before making any new decisions or new instructions to work under the conditions of the spread of the Coronavirus, in addition to analyzing and interpreting information about existing workers. The study includes identifying workers' characteristics and the different specialties and administrative positions such as the Aviation Authority, the Egyptian Airlines Company, the airport company, Air traffic management units, and the Aviation Academy for air training. , the study knows what the workers ignite towards the spread of the epidemic and how this worker/director thinks. If we can find out how they think, we can convince them of the

feasibility of implementing new decisions and involving them in decision-making and then implementing them to restore activity in the civil aviation sector in Egypt.

5.2 How is the study done?

The first step of studying the market is collecting data from workers, and this done using many methods, and then this data is analyzed using the statistical program to obtain information or knowledge, which helps make the right decision.

 Among the most prominent methods used here to collect data:

1- Interview to be conducted over the phone or by meeting the investigative person face-to-face through the Zoom program (online) to reduce infection spread between the researcher and the worker.

2 - Regular collection of information by Questionnaire Surveys, information gathering process, which used to access information by asking scientific questions, and the survey uses several tools to collect information, including the questionnaire there.

 3- Online Survey by Email Survey, scanning by phone Survey, are the least expensive methods.

4- The employees 'opinions are polled by phone if one of the employees expresses his desire not to use the Internet due to his absence, weakness, or quality of His signal is weak.

 5- Questionnaire Collecting information from the sample members, and the questionnaire can be used in a poll to measure each other's variables' effect.

5.2.1 Focus groups

The meeting is held with a group of real customers of the sector to constitute a representative sample of workers in more than one of the departments of Civil Aviation, survey their views, and answer the impact of access to feedback. The epidemic is spreading.

NB: There is significant confusion between the survey and the questionnaire, but there is a difference between them. The survey is the process of data collection and is usually widespread. They use several methods to conduct the survey, including the questionnaire, while the questionnaire is a tool for collecting data. The questionnaire can be used in two cases, either in a survey or in a scientific study, to measure each other's variables' effect.

5.3 Questionnaire design specifications

1- Simplicity, clarity of the questions, considered that the questions are formulated in a simple and easy language to understand them by all workers.

2 -Impartiality in the questions where the researcher is concerned that the questions are unbiased to the authority or departments concerned and made in the general context, that is, do not suggest to the worker and his orientation towards a specific answer desired by the government represented in the Ministry of Aviation.

3- It also considered that the questions should be short and brief and avoid the long questions that cause boredom to the investigating factor.

4- Questions were well defined so that they do not understand the work in more than one sense or create a misunderstanding.

5- The questionnaire was designed attractively by the objectives, and the questions were distributed symmetrically and with a flat line size. Furthermore, it is preferable to use simple and calm colors in the questionnaire, as shown in the link form.

6-Purpose of the questionnaire was clarified. The confidentiality of the employees' data was guaranteed; it was used only in the research presented in the study's interest and informing the surveyors accordingly.

5.3.1 Shape design

This survey form consists of 10 survey questions that will help individuals record their practical observations. Useful reactions are necessary and beneficial. Feedback is valuable information that helps in making informed and organized decisions. Top performing companies and organizations often rely on reviews because they are continually looking for ways to improve their overall performance—forms of questions in the (Monkey survey application) form included in the questionnaire.

5.3.2 Closed question system

These are questioning whose answer is specific, such as answering yes or no, or multiple-choice questions, and the answer is limited to several choices, and the investigating factor must choose one of them. The ease of answering, shortening time on the investigative factor,

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answered quickly characterized the questions. Also, these questions can be coded and analyzed statistically faster, easier, and with greater accuracy.

5.4 Demographic information on the sample

It consists of 7 male persons working in the administration of the civil aviation authority (director of central management), the management of air traffic units (general manager of air control), the management of Cairo International Airport (director of operations), the management of the airline company (director of air operations), chief pilots of the company Flight, air traffic control instructor. The target group's average age in the survey is between the ages of 40 and 55 years, all of whom are married and have children between one to 3 children in the family and ages ranging from 4 to 15 years. At the educational level, they are university graduates who hold postgraduate studies and have specialized training courses in senior management and the development of policies and procedures.

5.4.1 The analysis questions as follow:

1-How worried are you about the impact of coronavirus on aviation?

Fig (8)

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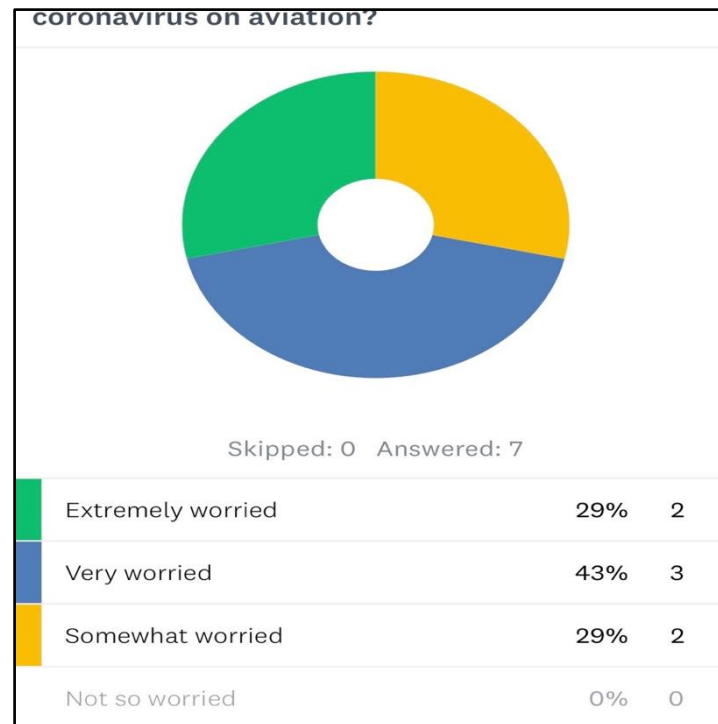
When asking the first question of the target segment, all the participants answered it, and it was clear that 42,86% of them were very concerned about the impact of coronavirus on the aviation sector and three people answered with this same answer, announcing significant concerns about the future of the aviation industry in Egypt and the whole world and the loss of their lives due to the severity. The pandemic speed spreading when for too anxious people and those who have some anxiety, the proportion in the sample was equal to 28.57% (workers for each question). see figure (8)

2-How worried are you about the impact of coronavirus on your company?
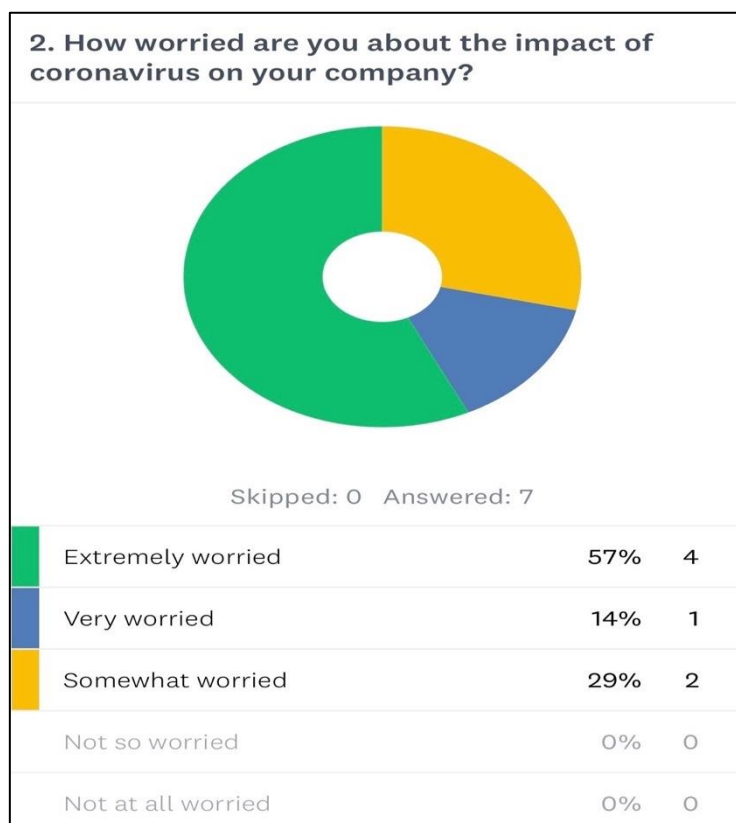
Fig (9)

When posing the second question, all the target groups answered it, and one of the most important observations was that 57% (more than half the number 4 workers) are very concerned about the effect of the spread of Corona Virus on their companies, departments, specialties) and the phone contact for them was more evident when they reported that hundreds of jobs would be lost after the suspension of work in the aviation sector, in addition to reducing

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salaries, if the disease upon injury is included in the laws of occupational work injuries, while the remaining members of the target group have low-intensity anxiety between severe anxiety and some anxiety, as shown in the figure (9).

3-How easy or difficult is it for you to work effectively these days?
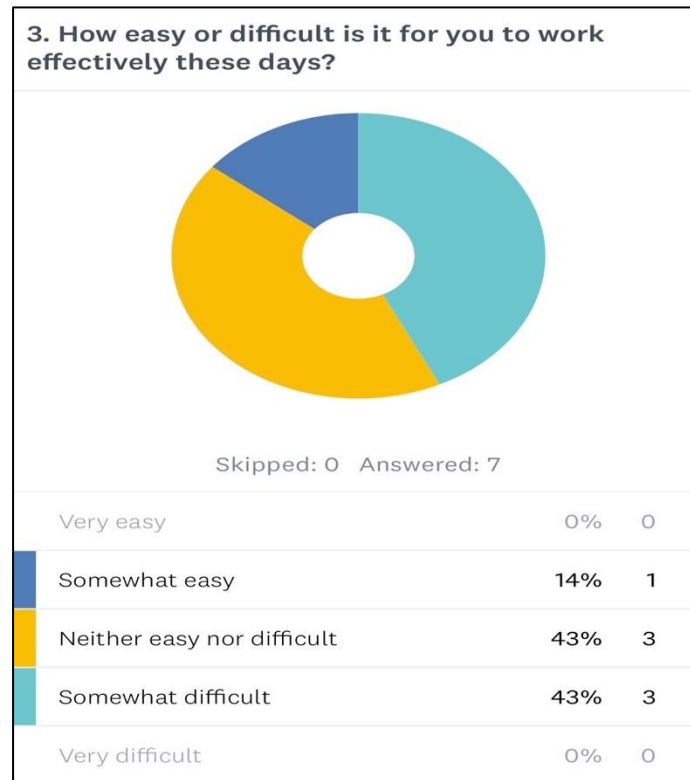
Fig (10)

The third question did not raise a clear conclusion regarding the employees 'work efficiently, as the category divided into two groups approximately to 43% in terms of those who support the existence of difficulties that will face the workers in light of the epidemic outbreak. Moreover, the efficiency can have difficulties, or there is no impact on workers' efficiency with the same ratio, and the presence of one person was optimistic that the work would be comfortable in some way with a percentage of 14%. Calling a member of the sample to take his opinion about his testimony, and he signed the only person who surprised by his response that the work would become easy as he stated that he could work from home and through the Internet and a Virtual contract conferences for workers are a golden opportunity to group them in this way. See figure (10).

4-What are the top three biggest challenges you are currently facing while working remotely?
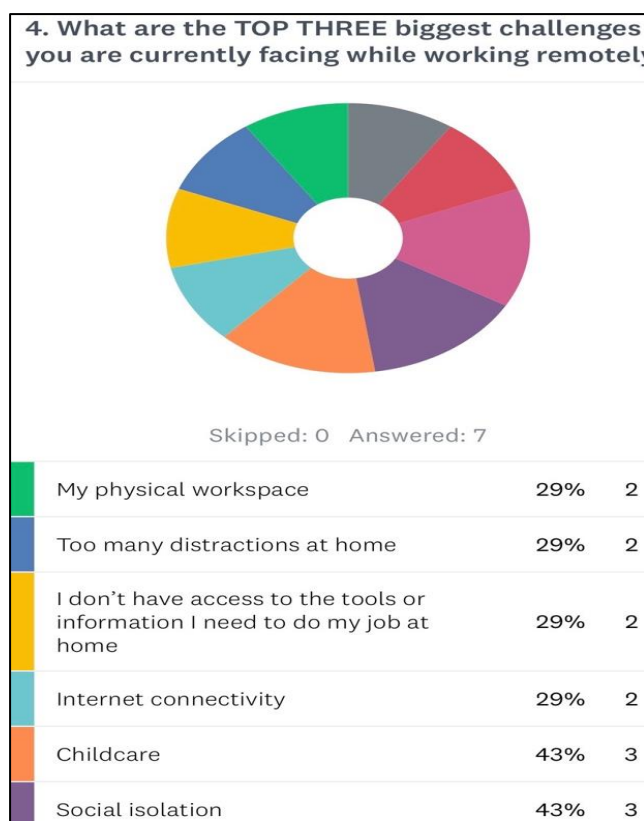
Fig (11)

The most challenging situation that the sample faced in work was 43% (3 persons) remotely. It was to care for children under the age of 14 years at home, as during the general ban and management of the sector's work from home. Also, all family members became close to each other, causing distraction and annoyed about completing work at home. They also had to monitor them and give them a sense of safety because they felt afraid of a dangerous thing and a pandemic that might kill them, and that same percentage equaled 43% (3 workers) to the issue of social isolation and the issue of difficulty in communicating with colleagues because of their distance from the worksite and their spacing despite its possibility, through the internet or technology. Some businesses may need to meet face to face to complete or understand them. The sample showed another analysis of 29% (2 individuals) ' presence for other challenges faced by workers, decision-makers, and members of the government as challenges that change

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the form of work, the difficulty of work, and controlling it from home. Lack of easy access to information of a confidential nature (uses servers from government buildings to work with it), the quality of contacting the international information network, relying on an agenda with fixed times and suitable for each region in which the worker resides, or the general concern of the three parties, including a worker and a decision-maker, is better than the government, because of the epidemic and his death as a result of the injury. See figure (11)

5-Thinking about your current work from home arrangements, how long is this something you could comfortably maintain?
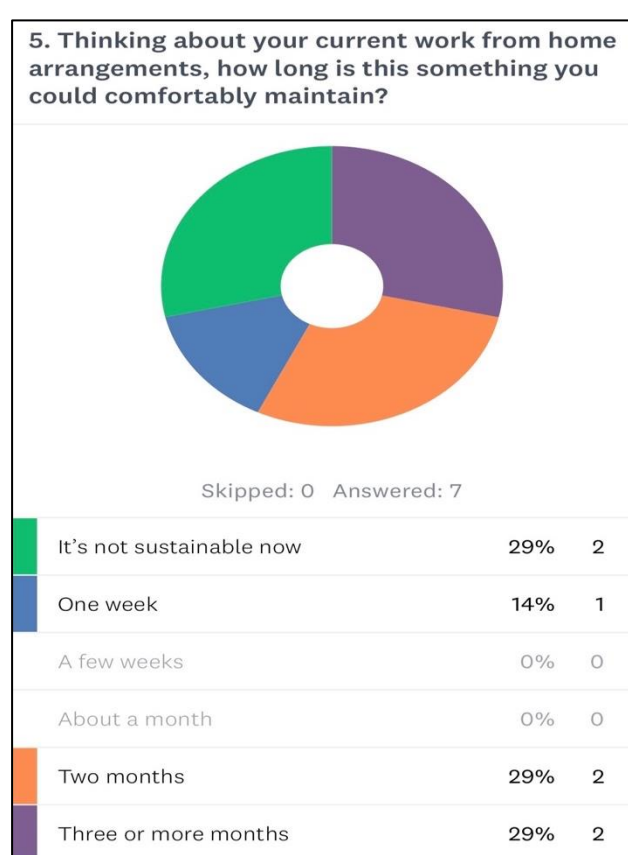
Fig (12)

The fifth question here measures the workers' satisfaction, the leaders, members of the government regarding the issue of feeling comfortable and comfortable with the issue of working from home and the extent of their ability to bear this matter and its continuation or not. Of course, two of them announced that they rejected the idea completely (29%), and they were pilots and air traffic controllers who need their presence in Their job sites. How does the pilot take off the plane from the house? A trained air observer added that it is possible to train air surveillance from home, but how does the observer use radar to direct planes from home?.

He must go to work to do this. What is the rest of the leaders and government employees (the flying authority) with equal proportions of 29%? It is possible to work from home, but for two months, no more. See figure (12)

6-How often would you like the leadership team to communicate how your company will handle business complicate due maintain?
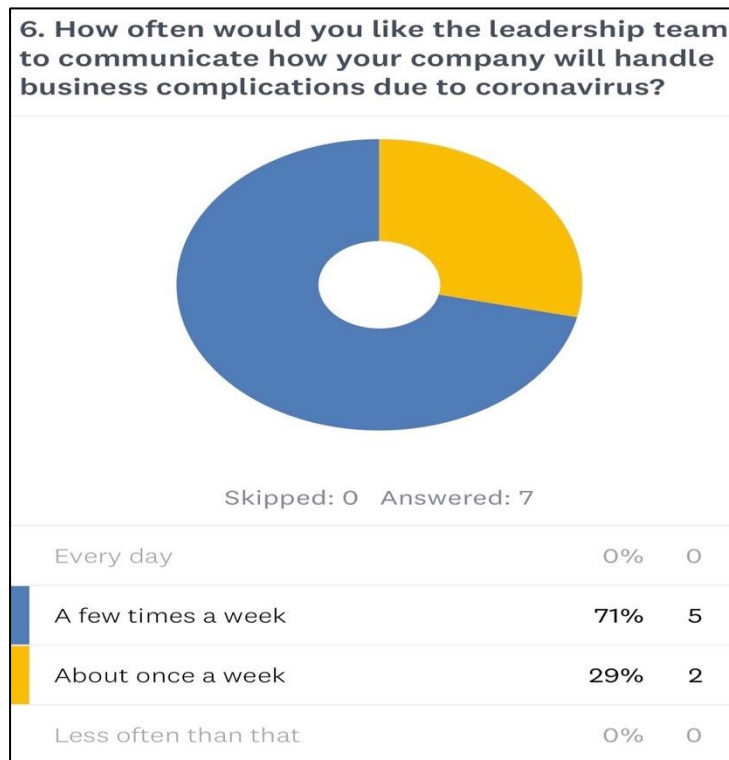
Fig (13)

The sixth question is devoted to asking the follow-up form of departments and those in senior management authorities. We know that the relationship between executives. For example, in the sector is very important, and the group of managers and employees at the upper and middle management level has gathered a percentage of 71% (5 workers). Through a phone call to them, they all reported that they needed several times per week to achieve the link and follow up the actions to find the strengths and weaknesses that appear during these exceptional circumstances. On the other hand, both the pilot and the air traffic controller reported that the rate was 29% (2 persons). They will only need one time to communicate with the administration levels due to their tactical work and location, which does not require frequent contact. See figure (13).

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7- How confident are you in the company's leadership team to make the right decisions to manage through this crisis?
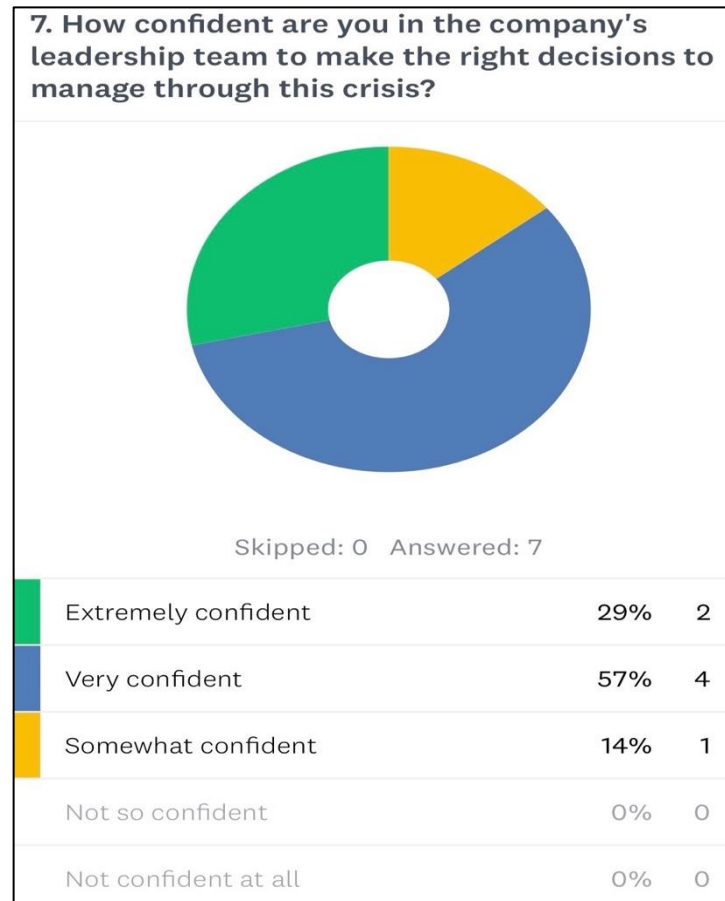
Fig (14)

The seventh question comes to measure the extent of confidence, which explains the correlation of the institution's relations with workers. Also, the extent to which their future apprehensions are absorbed in the crisis, concerning work in general and the workplace in particular, changes may occur that may affect confidence in managing the crisis. Besides, reduce the pandemic spread, especially from the psychological point of view where our societies' morale is the driving force of any worker in any institution. The confidence of workers in management came at a remarkable level of 57% (4 workers), while two workers expressed their high confidence that the management team managed the crisis with professionalism. See figure (14).

8- How confident are you that you have the right resources and benefits from your company to help support you through this period?
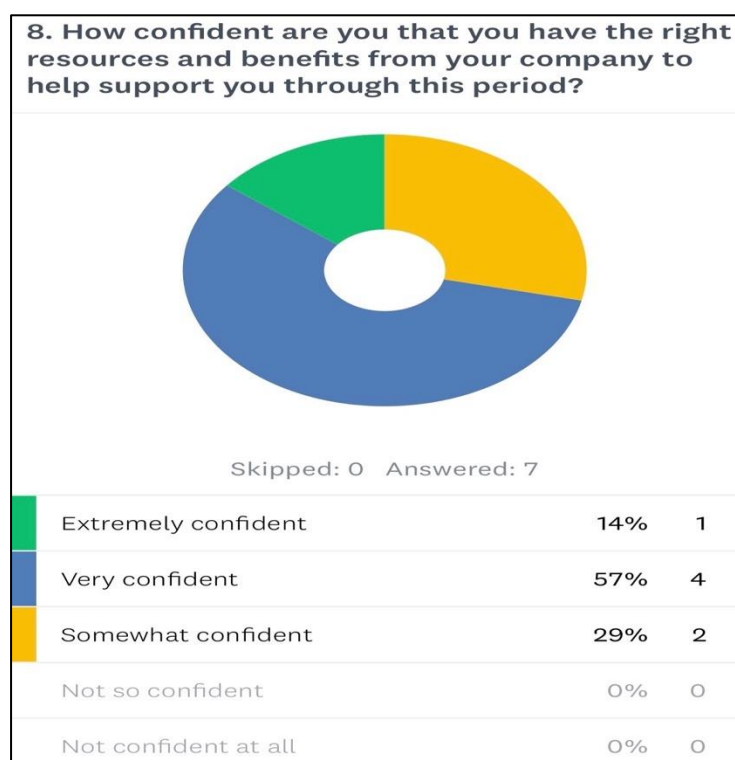
Fig (15)

The eighth question focuses on its content on the extent to which the worker personally trusts the organization (company, government, leadership) and that it has taken the right resources, benefits, advantages to try to help the worker in the presence of the crisis. Their great confidence in institutions in the civil aviation sector and government workers has increased by 57%, while there is low confidence for some workers in private airlines that are not owned by the state (2 workers) and at 29%. See figure (15).

9-Outside of work, how confident are you that you have the right support network to help you through this period?
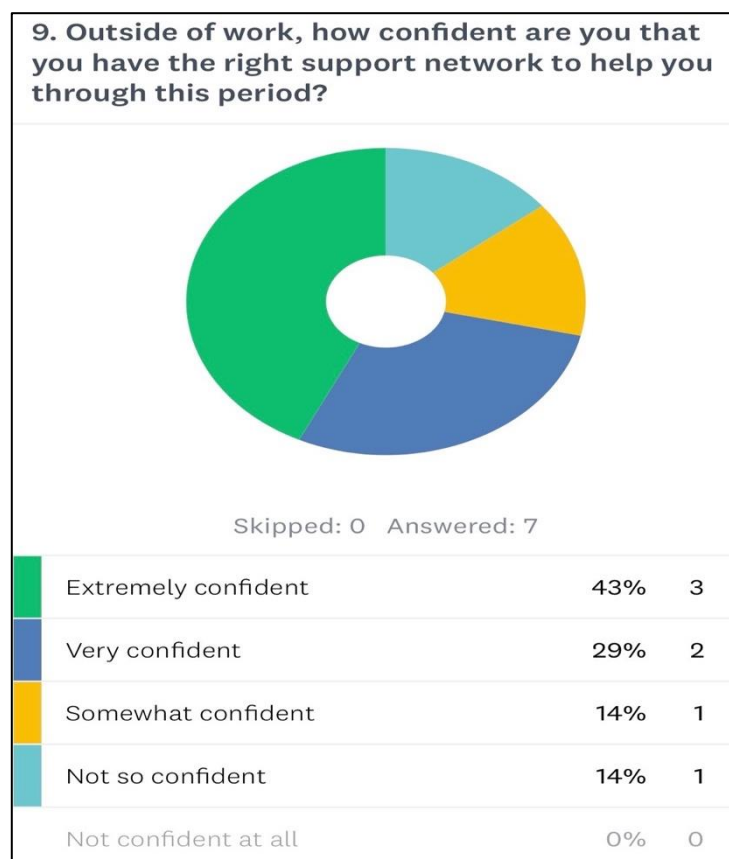
Fig (16)

The ninth question collects the investigators' opinion within a framework outside the worksites and their confidence in the existence of a support network that helps them face new work challenges, especially the spread of the Krone virus epidemic. Chapter 4 explained the use of a social network (WhatsApp) for example that it included their mobile numbers and the creation of a group for workers (Unusual), including how to prevent health workers from infection (see the brochure) and share their feeling that they are protected, 43% showed their absolute

confidence in support during the crisis. In contrast, two workers expressed a lack of confidence. See figure (16).

10-What is your single greatest work-related concern right now?

The tenth question's design is to leave employees and leaders of every administration to choose answers that may not measure their answer to questions. Moreover, answers were the first concern for salaries and continuity to work during the crisis. The workers appear confused. They do not know their most important concerns during that crisis. The reasons for the presence of intellectual shock due to the presence of fear may be preventing it from a clear answer. Another person was interested in returning quickly to activity in the sector before the spread of the virus. For a safety specialist, he is very concerned for the safety of employees and workers in the sector, as, with increasing injuries, work may lose employees with rare experiences and indicated in a phone call that he is very concerned about working at home, workers may lose air safety skills and procedures and only care about occupational health and safety in the workplace.

5.4.2 Conclusions of the survey

Some events reshape the work environment, from the language we use to the security and control level that we are used to it. Corona falls into this category that reshapes the work environment and may even have a more significant impact. This global virus that keeps us in our homes changes our relationship with the administration and government and each other as workers. Many of the changes these experts expect to see in the coming months or years may appear unfamiliar or disturbing to the business community. We must always work on studying how to be affected by changes, circumstances, emergency crises, and changes in the form of work, and what this reflects on daily work, and work to provide all the needs, requirements, and information necessary to follow up and continue the work and avoid future losses in preparation for a quick return to what was working before the pandemic. Despite ambiguities that we must live in during this year, the senior management and leadership must look at the questionnaire, given the conclusion that:

1- Keeping employees working

Making every effort to avoid terminating employee service, even during the inevitable lack of cash. Because avoiding the service's termination will improve the ties with the company

or the government, besides protecting the employees from facing economic difficulties. Also, with the imminent lending cessation and the possibility of natural deterioration in communication with the corporation, the current relationship with employees and the corporation may be the thing that may save the future of the sector as a whole. The organization that maintains its employees; She keeps her portfolio. It is certain that this results in satisfaction and goodwill among the institution and its employees and helps in a smooth recovery phase.

Before deciding to terminate the employee's service, consider alternatives such as reducing work hours and reducing salaries (including senior managers) or converting the permanent work contract to a changing work contract, or vacations that allow employees to retain benefits such as health insurance, as well as retaining in office when the institution can re-employ.

2. Communicate with employees daily

The goal should be that every employee will communicate with another person in the organization daily. Early reports from the field indicate that employees need to communicate once a week with senior management, and they also need to communicate daily with their immediate superiors. We must know that if there is time for transparency and accuracy; This is the right time. Employees need clarity about where and how to work. Reducing the "unknown" of employees, releasing their mental energy to be more effective in carrying out their work. Also, most employees may prefer to hear this sentence, "This is the plan for the time being, but the situation is changing." They prefer to hear this than hear the usual sayings while waiting to formulate an ideal message. It has always been in the business's interest to take care of people caring for customers.

Since the current crisis is an exception to standard business practices, this is also an exception and should be in employees' interest. The people who work for us are the custodians of customer relationships, daily operations, and the future of activity in the Egyptian aviation sector, and we must all treat them well.

CHAPTER SIX

Aviation industry resilience, survival and recovery

6.1. Role of ILO during the outbreak of COVID 19

On May 18, 2020, International Labor Organization devoted their efforts and experience to mitigate the global impact of COVID-19 by recommending a policy framework for tackling this pandemic crisis's economic and social impact [47] (ILO, n.d.).

The organization has four principles or pillars to fight this pandemic, the most important of which is providing policy advice and proposing projects to the three working parties (government, employers, workers), such as training, education, and empowerment. Since the pandemic outbreak, the organization has established an international observatory to monitor its effects on the labor market.

The International Labor Organization has identified four fundamental pillars to fight the Coronavirus based on international labor standards, which can help protect employers and workers, especially children during this period, which are: stimulating the economy and employment, supporting companies, jobs and income, and protecting workers in the workplace according to guidelines Occupational safety and health, and relying on social dialogue to find solutions, which in turn confirms the critical role that occupational safety and health standards play in preventing Coronavirus. Moreover, upon returning to work, it is one of the essential tasks of the Ministry of Manpower in Egypt, the Federation of Egyptian Industries, and other businessmen associations and trade unions to ensure appropriate safety and health measures to protect workers. Social dialogue is the key to protecting workers while maintaining the level of activities.

6.1.1 The ILO's four-pillars policy framework

Based on international labor standards, for tackling the socio-economic impact of the COVID-19 crisis:

1- Pillar 1 Stimulating the economy and employment. The COVID-19 crisis impacts both the demand and the supply sides of the labor market, and it has significant implications for ensuring full employment and decent work. In particular, the crisis is pushing many families into poverty and increasing exiting inequalities

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1- Pillar 2 Supporting enterprises, job, and incomes

Efforts to contain the virus's spread have disrupted production flows, caused demand for non-essential goods and services to plummet, and forced enterprises worldwide to suspend or scale down operations.

2- Pillar 3 Protecting workers in the workplace

While many people have lost their jobs and income, many others continue to work. Making sure the safety of workers is a shared priority.

3- Pillar 4 Relying on social dialogue for solutions

The lessons from previous global crises have shown that governments alone cannot address the challenges stemming from strong shocks.

From this standpoint, the Egyptian government adopted the pillars of occupational safety and health recommended by the International Labor Organization. Egypt took a package of measures to curb the spread of Corona that included many proactive measures. The Egyptian government decided to reduce the number of government employees in their workplaces as a preventive measure, allowing working from home arrangements for employees whose job permits. The rest of the staff heads to their offices on a rotating basis. Granting mother's special paid leave; Pregnant women or those with children under 12 years of age have a special leave; Any employee returning from abroad shall be granted exceptional leave for two weeks; Prohibiting all employees from attending training or workshops; Any employee with a medical condition has an exceptional leave.

 The Egyptian government has taken many precautionary measures to preserve workers' health and safety in sectors that continue to work, such as the construction sector, to limit the spread of the Coronavirus in the sites of various projects. These statements coincide with the celebration of this year's World Day for Occupational Health and Safety. It occurs on April 28 of each year. It coincides with the current year with the spread of the Coronavirus around the world - and this is an occasion to highlight the role of occupational safety and health management systems in strengthening protection measures to reduce the risk of infection for workers, including children, which will help reduce the social and economic repercussions of the pandemic.

6.2. Government action

The Egyptian Initiative for Personal Rights appreciates the efforts made by the Egyptian government in the face of the emerging Coronavirus and emphasized that the economic and social priority in this crisis is to protect individuals' entry and ensure the availability of strategic commodities the market and maintain stable prices. And then comes the state's role in supporting companies and factories without venturing into individuals' health in a way that does not detract from their allocations and does not cut into the taxpayer money.

The Egyptian initiative follows up the Egyptian government's measures and the central bank to mitigate the economic and social impacts. The precautionary measures that are applied to confront the spread of the Coronavirus, evaluate them in the light of protecting the health and lives of citizens, protecting their incomes, avoid putting the health and lives of workers at risk to keep the economy at full capacity, and suggesting some measures that must be implemented for the lowest groups not to bear the brunt of the crisis.

6.3. Cycles for a safe start

Flight operations may need to consider classifying each route or flight for the level of risk of exposure to Covid-19 to determine whether applying additional mitigation is required concerning services, policies, or procedures. China's civil aviation administration has the experience of containing this outbreak of the covid19 pandemic and has an excellent recipe to restart the aviation sector safely. China aviation authorities adopted criteria to determine the risk factor level during flights, but they cautioned that: Airlines should consider their risk assessment processes and criteria in conjunction with any local regulatory recommendations or requirements. The Egyptian ministry of aviation went with this model as a best practice and applied it to domestic and international flights.

Example risk scoring criteria according to passengers capacity during flight :

(a) Confirmed cases at point of origin	0 up to 50 Score=**1**	51 to 100 Score=**2**	More than 100 Score=**3**
(b) Duration of flight (Hours)	0 up to 4 Score=**1**	More than 4 Score=**2**	---
(c) Passenger load (%)	0 up to 60% Score=**1**	61 up to 80% Score=**2**	More than 80% Score=**3**
Risk level associated with flight	Score determined (a) + (b) + (c)		
Low risk	3-4		
Medium risk	5-6		
High risk	7-8		

Table (3) Risk scoring criteria [48] (IATA, n.d.)

As airlines resume passenger services during the Covid-19 Crisis, there are likely to be multiple public health, regulatory, training, operational crew, and colossal customer challenge. This chapter aimed at best practices models proposed operations and help formulate alternative procedures till lifting all restrictions. The aviation sector should consider the following when preparing for operations during and post-pandemic, in order to determine effective risk mitigations, which support their workforce and passenger confidence by Ensure that the system can restart operations once markets reopen as:

· Slots and schedules in place for when operations are resumed

· Operational licenses in place for when operations resume

· Necessary certification and airworthiness in place for when operations resume

· Supply Chainable to resume operation

· Minimum measures in place to enable border reopening and resumption of operations.

· Procedures are unlikely to be normalized/automated.

· Temporary arrangements in place supported by SOPs.

· Consistent application and mutual acceptance with the vaccine in place, with widespread uptake, temperature screening subject to different flights' risk levels, at different phases of flights.

6.3.1 Low-Risk Flights

We are using Non-contact infrared thermometer equipment (calibrated) to measure passengers' body temperature and the symptoms observed as required. One should timely report and respond in case of ill passengers found with symptoms including fever (≥37.3°C), fatigue, or dry cough, then cooperate with local health authorities in the handover of the ill passengers. [49] (ICAO, 2020)

6.3.2 Medium and High-Risk Flights

The passengers' body temperature measurement before boarding and in-flight, on flight segments and flight distance. [49] (ICAO, 2020)

6.3.3 Pre-enplaning

They use non-contact infrared thermometer equipment (calibrated) to measure passengers' body temperature and the symptoms before boarding. Timely report and response in case of suspected passengers found with symptoms including fever (≥37.3°C), fatigue, or dry cough, and then give support to local health authorities in the suspected passengers' handover. [49] (ICAO, 2020)

6.4. Personal Protective Equipment (PPE)

Infection Control Measures for Crew Members given the risk level of flights, different prevention, and protection measures:

1. Low-risk flights: Wearing protection of disposable medical masks or facial masks of a higher standard
2. Medium-risk flights: Wearing protection of surgical masks or masks of a higher standard.
3. High-risk flights: Flight crew should wear surgical masks or masks of a higher standard and goggles, and change facial masks every 4 hours in general (or anytime considered necessary, similarly after this). Cabin crew should wear N95 particular matter protection facial masks or medical protection masks goggles, and disposable rubber gloves, and change facial masks every 4 hours. Crew members should reduce entering the cockpit and using separate toilets. The intercom system for communication among crew members to avoid close contact. [49] (ICAO, 2020)

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6.4.1. Discarded masks

Should be placed in a separate bin, sprayed or sprinkled till thoroughly soaked with chlorine disinfectant (500mg/L-1000mg/L) before post-flight cleaning, and packed in a tightly knotted plastic bag for centralized disposal. [49] (ICAO, 2020)

6.4.2. Considerations

The mask should be close to the face, covering the nose and mouth completely, leaving no space. During in-flight service and when removing the mask, the crew should not touch the outside of the mask with their hands to avoid contaminating their hands. The facial masks should be changed with new ones as soon as they are damp or contaminated, and cleaning hands with sanitizer both before and after the replacement. The crew can use alcohol-based disinfection wipes to clean and disinfect their hands. When the crew is unsure whether their hands are clean, avoid touching the nose, mouth, and eyes with their hands. When sneezing or coughing, one should try to lower the head or turn away from passengers and crew members nearby, and cover the mouth and nose with a tissue or flexed elbow. After touching or disposing of wastes, cleaning hands with soap or hand sanitizer under running water followed by hand disinfection. [49] (ICAO, 2020)

6.5. Advice for In-flight Service

1. Low and Medium-Risk Flights

Food-preparing procedures should be simplified, providing pre-packaged food, and canceling cold meals and ice to reduce exposure risks and avoid cross-infection. Lavatory should be cleaned every 2 hours (or anytime considered necessary, similarly after this) during flight, and once finished, cleaning and disinfection of hands. [49] (ICAO, 2020)

2. High-Risk Flights

Cabin crew should avoid close contact with passengers and only provide necessary in-flight service. They hand over pre-packaged food and bottled water before or during boarding. Unless it is required especially, providing the catering service onboard is prohibited. Flight attendants should be assigned to provide service for specific areas, and flight attendants designated should provide basic service for the crew members when needed. Making efforts to arrange for passengers to sit in separation. Lavatories should be cleaned at least every hour during flight,

and once finished, cleaning and disinfection of hands. The last three rows of seats should be reserved as quarantine areas when handling possible in-flight emergencies. [49] (ICAO, 2020)

6.6. Routine Cleaning

Routine Cleaning and Preventative Disinfection of Aircraft 5.1 PPE for Cleaning Crew as follow:

1. Low and Medium-Risk Flights

One should wear surgical masks or masks of a higher standard, uniform, disposable snood cap, disposable rubber gloves, work shoes (as necessary), waterproof apron, and protections against chemicals such as disinfectants. [49] (ICAO, 2020)

2. High-Risk Flights

One should wear an N95 mask, particular matter protection masks or masks of a higher standard, disposable mop cap, goggles, disposable protective suits, medical rubber gloves, and disposable shoe covers. [49] (ICAO, 2020)

3. Preventative Disinfection

Preventative disinfection after cleaning the aircraft. [49] (ICAO, 2020)

4. Frequency

Preventative disinfection should be done regularly, at least once a week, for low-risk flights; and every time after flight for medium and high-risk flights. An assessment of the effect of post-flight disinfection may be carried out for high-risk flights if conditions allow. [49] (ICAO, 2020)

6.6.1. Rules of operation

Separate rags and mops should be used for the aisle, lavatory, and gallery, and mark them with different colors to avoid cross-contamination. Different personnel should be tasked with each of the areas mentioned above when conditions allow as follow:

1. During disinfection, robbing surfaces using rags soaked with disinfectant, after some time for a reaction; finishing the usual cleaning process to avoid the cabin component's erosion due to prolonged exposure disinfectant.

2. The disinfectant should be sprayed to the cabin floor from the front to the back, and then key areas should be disinfected. Once finishing the cabin disinfection, a disinfectant should be resprayed to the cabin floor from the back to the front.

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3. Disinfection of key areas should proceed in the following order:

- Aisle: Ceiling, overhead bins, reading lights, air outlets, sidewall panels, windows, seats (tray tables, armrests, passenger control units, decorative panels), cabinets/lockers, bulkheads, magazine racks, cabin attendant seats.

- Lavatory: The disinfection in the lavatory from contaminated to clean areas, as follow: toilet bowls, waste bins, basins, lavatory sidewall, ceiling, door assembly (door surfaces, doorknobs, ashtrays, if installed, and latches)

- Gallery: Ceiling, ovens, water boilers, coffee makers, galley facilities, lockers/drawers, waste bins. [49] (ICAO, 2020)

6.6.2. Disinfectants

Approved aircraft cleaning and disinfectant products for airworthiness should be used for products list, similarly starting now) to avoid corrosive aircraft components. Given the characteristics of the current epidemic and knowledge. Their concentration should refer to product use instruction. Using compound quaternary ammonium salt, double-chain quaternary ammonium salt, hydrogen peroxide, and chlorine-containing disinfectant. For hydrogen peroxide, concentration should be no higher than 3% and reaction time by 20 minutes; effective chlorine concentration should be within the range of 250mg/L-500mg/L, and reaction time is 10 minutes. [49] (ICAO, 2020)

6.7. Handling of In-flight Medical Emergencies

1. Infection Control Measures for Crew Members: Upon contacting ill passengers (having symptoms such as fever, fatigue, or dry cough) or treating body fluids (such as respiratory secretions, vomit, blood, diarrhea) or contaminated objects and surfaces, cabin attendants wearing personal protective equipment (**PPE**) found in the Universal Precaution Kit (**UPK**). [49] (ICAO, 2020)

2. Gloves: Cabin attendants wear double-layered disposable rubber gloves. If there are more than two ill passengers on board, disinfection of hands before contacting other passengers. [49] (ICAO, 2020)

3. Masks: Cabin attendants should wear medical protection masks. Touching or adjusting masks is prohibited during emergency handling. [49] (ICAO, 2020)

4. Goggles: Reusable goggles should be promptly sterilized and dried every time after use. Goggles with an anti-fogging film should avoid wiping with disinfectant. Instead, it better to be washed with water then exposed to close-range direct ultraviolet lighting for over 30 minutes. [49] (ICAO, 2020)

5. Protective clothing: When contacting ill passengers, suspected or confirmed patients, cabin attendants should wear goggles and disposable protective clothing (replace by the protective apron in the UPK as an interim emergency measure). [49] (ICAO, 2020)

6.8. On-board Emergency Quarantine Measures

The ill traveler (passenger or crewmember) should be quarantined on-board by the following methods:

1. The last three seat rows of the cabin should be designated for relative emergency quarantine. If possible, the ill traveler should be seated in the right window seat, by which the breath exhaled could be exited the cabin directly to the most considerable extent. (59) (ICAO, 2020)

2. The right rear lavatory should be specifically designated for quarantine purposes. we better assign specific crew members to provide necessary in-flight service for quarantine areas, and the crew members should minimize close contacts (within 2 meters) with other crew members and unnecessary contacts. [49] (ICAO, 2020)

6.8.1 Aircraft Concurrent Disinfection

The cabin contaminated with body fluids/substances (such as respiratory secretions, vomit, blood, diarrhea) should be disinfected timely according to the procedures in Emergency Medical Equipment Installation and Training for Large Transport Aircraft (AC-121-102R1 issued by CAAC) as mention below: [49] (ICAO, 2020)

1. Wearing personal protection (PPE). [49] (ICAO, 2020)

2. Preparing disinfectant: One should take one surface disinfection tablet and put it into 250-500ml clean water to make a 1:500-1000 disinfectant. [49] (ICAO, 2020)

3. Covering the respiratory secretions, blood, vomit, diarrhea, and other contaminants evenly with absorbent disinfectant for 3-5 min to enable them solidified. [49] (ICAO, 2020)

4. Shoveling the coagulated contaminants with portable pickup shovels into biohazard wastes bags. [49] (ICAO, 2020)

5. Sterilizing contaminated area with pre-prepared disinfectant, making sure disinfectant stays at the contaminated surface for 3-5 minutes, then wash the area with clean water three times before drying its towels. Put those towels and other used disinfection materials into biohazard wastes bags. [49] (ICAO, 2020)

6. Disinfecting hands before removing protections by the following order: taking off protective suits (aprons), gloves, applying skin disinfection wipes for hands disinfection; then taking off goggles, facial masks, and at last applying skin disinfection wipe to clean hands and other parts of the body that may expose to contaminants. [49] (ICAO, 2020)

7. Placing all used protections and contaminated items inside a biohazard wastes bag; closing the bag, filling a label with "Biohazard Waste," and then tagging it on the seal. [49] (ICAO, 2020)

8. temporarily, the tied biohazard waste bag in a proper place prevents it from missing or being damaged or contaminating on board. [49] (ICAO, 2020)

9. Informing ground departments at the destination to prepare for takeover. [49] (ICAO, 2020)

6.8.2 Aircraft Terminal Disinfection

1.After carriage of ill passengers, we should make terminal disinfection. [49] (ICAO, 2020)

2. After all, people get off the aircraft, close cabin doors, and adjust the air conditioning to high-volume to complete all-around air exchange. [49] (ICAO, 2020)

3. Once the finishing air exchange. First, the sitting area disinfection of ill passengers and lavatory, then clean other areas following the post-flight cleaning requirements. [49] (ICAO, 2020)

4. After cleaning, one should proceed with terminal disinfection by following the general principle of thorough disinfection from out ring-to-center, top-down, and encompassing-approach. [49] (ICAO, 2020)

6.8.3 Flexibility to the aviation worker licensee holders (pilots and other licenses)

In seeking another way to give more flexibility due to the pandemic crisis, the Egyptian civil aviation authority expanded the duration for license validity in a matter of safety decision for three months. It has already resulted in drastic restrictions and arrangements preventing licensee holders from timely completing the essential training and medical checking, type rating, and validating other privileges before expiry during this time, defer the ECCA fee

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payments for a prior of 3 months. The decision included all-important aviator workers' licenses and certificates such as ATCOS, pilots, ground operators, cabin crew, flight dispatchers, emergency operators. (see appendix)

6.8.4 Recommendations to Aviation academy while preserving progress

Training Aviation Academy should take several preventive measures to ensure their students' and staff's safety and well-being and ensure compliance with government directives and recommendations. Scaling up distance Learning System (DLS) and other online learning tools enable the theoretical portion of the pilot /air-traffic controller education programs to continue while allowing students to attend classes from home. Moreover, the Safety and Compliance department at Training Aviation Academy should escalate their routines for disinfecting, cleaning, and sanitizing aircraft and simulators after each 1-on-1 lesson at the training locations where they can still operate. As written in this paper, we can still conduct 1-on-1 studies at our training locations in Egypt. The academy is now monitoring the situation closely as it progresses to ensure that they are protecting students, teaching staff, and being compliant with local regulations and recommendations. The academy management is pausing the flight and simulator lessons temporarily at the training location due to the academy council's restrictions, think about the increasing level of distance learning and theory lessons to ensure students' progression while adhering to aviation authority guidelines. We also suggest informing all students and teaching staff to resume their scheduled lectures via webinars and zoom conferences. Enables future students to learn more about what it takes to become a professional pilot from the comfort and safe place, home, and workplace.

6.9 Work on ratifying the ILO technical conventions for best OSH solutions

Most of the instruments adopted by the International Labor Conference in this field (OSH) address technical problems related to conditions for preventing work accidents and occupational diseases. These conventions have considered the technological and scientific developments and the development of organizational practices for work within the establishment, and their provisions include binding and exact obligations.
Some of these technical conventions and recommendations are of particular interest to developing countries. Reference regard to the Convention for the Prevention of Major Industrial Accidents (No. 174). The Chemicals Safety Convention (No. 170). The Safety and

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Health in Construction Convention (No. 167); The Occupational Health Services Agreement (No. 161); The Occupational Safety and Health Convention (No. 155); and the accompanying recommendations. As for the recent agreements on occupational safety and health, there are many, and there is no room for discussion. Instead, we mention, for example, the agreements related to the subject of protection from exposure to benzene and safety in the use of asbestos and working in mines and other agreements.

6.9.1 The Convention and Recommendation for the Prevention of Major Industrial Accidents (No. 174)

Summary of provisions: The aim of the Convention for the Prevention of Major Industrial Accidents (No. 174) is to reduce the occurrence of these accidents resulting from hazardous chemicals and mitigate their effects in the event they occur. This agreement applies to all significant risk facilities except for nuclear installations and factories that process radioactive materials, except for places where handling non-radioactive materials in these facilities, and military installations and transport work outside the site of the facility by means other than pipelines
*Note: Egypt has not ratified this [50] (ILO, n.d.)

6.9.2 The Safety in the Use of Chemicals at Work Convention (No. 170)

Summary of provisions: This agreement applies to all branches of economic activity in which using chemicals while permitting some exceptions that include individual facilities or products that have particular problems of an essential nature and cases in which the general protection is not less than that resulting from the application of the provisions of the convention.
*Note: Egypt has not ratified this convention [50] (ILO, n.d.)

6.9.3 Occupational Safety and Health in Building Convention No. (167)

Summary of provisions: This convention states, which applies to all construction activities, i.e., construction works, civil engineering, installation and dismantling (and this includes any activity, work, or transport process that takes place at any construction site, starting from preparing the site to the end of the project) - with some exceptions allowed. - However, approved laws or regulations on technical standards, codes of conduct, or other appropriate

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methods consistent with national conditions and practice. The convention ensures cooperation between employers and workers and requires employers and self-employed workers to abide by the workplace's safety and health measures.

 In the field of protection and prevention measures, the convention also deals with the safety of workplaces, scaffolding and ladders, lifting devices and equipment, transportation equipment, dirt removal, material handling, equipment, machinery, equipment and tools, and working at high levels, including surfaces, work in gaps, tunnels, pits, dams, and under compressed air. Work over water and in demolitions. Also, it addresses exposure to physical and chemical health hazards and precautions such as electricity, explosives, lighting, and precautions against fire. The convention refers to the provision and use of personal protective equipment and protective clothing, first aid measures, care, education, training, and reporting of accidents and diseases.

Note: Egypt has not ratified this convention [50] (ILO, n.d.)

6.9.4 Occupational Health Services Convention (No. 161)

Standard principle: Promote all workers' physical and mental health. By maintaining a safe and appropriate healthy work environment through preventive services.

Summary of provisions: through legislation, collective agreements, or any other approved method - gradually established occupational health departments for all workers, and their role is mainly preventive and indicative, within the framework of a consistent national policy, and consulting the most representative organizations of employers and workers in this type. Occupational health departments may be organized either in the form of a department that serves one institution or in the form of a joint division that serves several institutions together, and maybe organized by institutions or groups of institutions, public authorities, social security institutions, or another body authorized to do so. Employers, workers, and their representatives must cooperate and participate in operating them. These departments' tasks are to identify and evaluate health risks in the workplace by monitoring the work environment and methods and workers' health regarding their relationship to work. These departments provide advice in this area, encourage work, adaptation, and educate, train, and educate workers. It organizes first aid, participates in analyzing the causes of work accidents and occupational diseases, and contributes to vocational rehabilitation activities. These departments cooperate with other departments in the institution and with other departments to provide health services, and the workers in these departments must be qualified. Informing these sections of any known or

suspected factors that affect workers' health and illnesses among workers and absenteeism from work for health reasons, they should not be assigned to verify the reasons for absence. Supervising workers' health concerning work shall be free of charge and during working hours whenever possible. It may not result in any shortfall in their earnings.

*Note: Egypt has not ratified this convention [51] (ILO, n.d.)

6.9.5 Occupational Safety and Health Convention (No. 155)

The standard principle is to establish a coherent national policy in worker safety and health and work environment—communication and cooperation at all levels in this field.

Summary of provisions: This agreement, which applies to all branches of economic activity and all workers, including public servants - while permitting some exceptions in branches such as marine navigation and fishing - stipulates that each country must rely on the light of its national conditions and in consultation with the most representative organizations For employers and workers, to develop and implement a consistent national policy in the field of worker safety and health and work environment, and to review this policy periodically. This policy aims to prevent accidents and health injuries resulting from work by minimizing the risks associated with the work environment, as reasonably and as possible.

The convention identifies the main areas of action for such a policy. It lays down a relatively detailed set of standards for actions to take at the country level and those for the organization. The convention generally provides for the adoption of legislative, regulatory, or other necessary measures (including training), establishing an inspection system, and specifying the measures to be taken once the design phase of machines, materials, and even before their circulation.

The convention clarifies, as clarifies that employers must provide protective clothing and equipment to ensure, to the extent possible, that the work environment, machinery,

equipment, work methods, materials under their supervision shall be free from any risks to workers' safety and health.

The convention stipulates workers and their representatives in an establishment shall cooperate with the employer in fulfillment of duties that fall upon him and that the worker who withdraws from a work center believes for a reasonable reason that he poses an imminent and grave danger to his life or health and to report this immediately from any unjustified results.

The records of the International Labor Organization on the reality of Arab countries' ratification of occupational safety and health conventions indicate that the ratification rate is

shallow despite the urgent need for developing countries to act on these conventions. Not a single Arab country in West Asia has ratified the previously mentioned Occupational Safety and Health Conventions adopted since 1977, except for Iraq, which ratified Convention No. 167 in 1988 and Convention No. 148 in 1977. It should work, except for are no fundamental reasons preventing ratification. In many cases, it is a matter that requires severe review and study of these conventions' provisions for a thorough study.

*Note: Revise all the mentioned conventions above [51] (ILO, n.d.)

6.9.6. Recommendations to OSH conventions in action

 The Egyptian government should put into consideration ratifying OSH conventions, as mentioned in previous sections, and put them in action by:

1. Request the Ministry of Labor, the Ministry of Health, and the Ministry of Environment to work to revive a supreme national body in occupational safety and health, in which the concerned ministries, employers' organizations, workers' organizations, and concerned public and private institutions are represented, with the aim of full coordination among these bodies and providing advice in implementing a consistent national policy in occupational safety and health.

2. Request the Ministry of Labor to initiate the ratification process of international occupational safety and health agreements, especially Convention No. 155, Convention No. 161, Convention No. 170, and Convention No. 174, especially since Lebanon is the host country of the regional office of the International Labor Organization and is supposed to be proactive in This context.

3. Work to develop and activate the Ministry of Labor's inspection body's capabilities and activate coordination activities between this agency and the agencies and departments concerned with occupational safety and health affairs in other ministries.

4. Request the Ministry of Health to activate the Occupational Diseases Department's role and fully coordinate with the relevant department in the Ministry of Labor and the agencies and departments concerned with occupational safety and health affairs in other ministries.

5. We involve employers' organizations and workers' organizations in various occupational safety and health activities to recognize the responsibilities and duties and ensure workers' rights and deal with these organizations in an open, cooperative atmosphere.

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6. We are requesting the Social Security Fund to contribute to financing occupational safety and health activities to include organizing training courses and working with other concerned authorities to encourage and promote the foundations of occupational safety and health at the enterprise level, given the positive impact of this contribution.

7. Request the Ministry of Labor, in cooperation with the Ministry of Health, ministries, and other concerned parties, to update an integrated directory of industrial establishments and establishments operating in the state according to their size, type, and identification and classification of hazards.

8. Request the government to issue a decree to implement the Work Emergency and Occupational Diseases Branch in the Social Security Law.

9. Request the Ministry of Education and Higher Education, specifically the General Directorate of Vocational and Technical Education, to participate in planning, implementing programs and projects related to applying laws and regulations of occupational safety and health. Including maintaining personal safety in education, training, and work sites. It also gives attention to training trainers in education and training institutions and introduces material Occupational safety and health in continuing education and training programs and rapid vocational training.

10. Request the International Labor Organization represented by the Regional Office to provide technical assistance to support all occupational safety and health programs at the Ministry of Labor and other concerned ministries.

11. Asking government agencies to support occupational health and safety activities related to reproductive health and rights, conduct research on the impact of industrial precautions on them, and develop a management and diagnosis of these effects.

12. We are urging the audio, visual, and print media to allocate the necessary efforts to ensure occupational safety and health at the national level and educate the community in this area.

6.10 Egyptian example for Sectoral social dialogue in the aviation sector

"Egyptian Social Partners did its parts, such as the Air traffic controller association and The Egyptian air transport federation in the Egyptian Civil Aviation sector. They adopted an occupational safety and health program started in April 2020, consisting of a general horizontal part and sub-parts for aircrew, air traffic management". Captain Medhat Abdel Azim said, the chairman of the air traffic controller association (EATCA) during a personal meeting [*]

(Azeem, 2020). All Egyptian air traffic controller association (EATCA) and the Egyptian air transport federation are partners in this project, with the Egyptian air transport Federation (EATF) as the project's leading organization.

He also said, "This joint project of the employers' and workers' organizations will support the work on this program and its implementation." With the help of this project, the social partners will:

- Address the challenges in the employment of the sector.

- Enforce the Egyptian Pillar of Social Rights, more precisely the following three principles:

1- Education, training, and life-long learning;

It is important to consider the specific circumstances for our operational situation, including our overall staffing levels, the number of students in training, and the current training stage at the air traffic control academy and our ATC facilities. While traffic control levels have decreased globally during the pandemic, and we may be experiencing significantly reduced traffic in the Egyptian national airspace, there will be a time when traffic levels will start to trend back upward. When that occurs, the need to have enough certified ATCOs to handle increasing demand will be a potential issue. There are challenges with obtaining the recommended six feet (two meters) of the distance between individuals, mainly found in particular circumstances in OJT sessions. After discussing the protective hygiene measures with the national air navigation provider company (NANSC), facility managers should work with their labor partners to determine what is achievable and whether measures can be put in place to ensure this critical activity can continue.

2- Occupational safety and health and increase protective hygiene measures.

While each operational environment is different, configuring most ATC control towers and radar control rooms so that operational positions are nearby, making social distancing a challenge. Maintaining the recommend six feet (2 meters) of the distance between individuals may not be possible for individuals on position and controlling live traffic. While there is no hard and fast rule for achieving social distancing in an operational setting, the discussions and consultation made by the NANSC and the EATCA are for facility management and labor representatives to work together to determine what is feasible. In some instances, reduced traffic volumes and adjusted shift schedules may provide an opportunity for workstations to be left empty between staff on position.

On the other hand, Shared headsets/microphones are a risk for virus exposure. Using personal headsets and headsets should not be shared with others. Just like with shared workstations/positions, they were Cleaning personal headsets before and after each use. In

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some cases, additional measures such as keyboard covers can make shared workstations easier to clean. ANSPs (NANSC) has implemented several creative rostering methods to help mitigate the effects of COVID-19 exposure and possible spread amongst essential staff. Some ANSPs are re-programming all operational shifts to create "closed" work shifts that allow the organization to manage a quarantine period better should any "direct contact" or infection occur. Reduced traffic levels have increased the ability of many ANSPs to roster in such a manner. (see official appendix)

3- Ensuring business continuity

While air traffic volumes may be depressed due to traffic restrictions and passenger demand erosion, there is still a considerable amount of traffic to be safely managed. Many regions are experiencing higher volumes of air cargo in order to provide for essential supply chains. Average or near-normal traffic volumes will eventually return, and the air-transport federation emergency management teams carefully consider potential complications that when that happens. Decisions by the government and the ministry of civil aviation after many Video conferences discussion encourage the ability to safely resume normal operations, particularly measures that might affect ATC licenses' currency and, therefore, necessitate additional training.

6.11. Chances and opportunities

Social dialogue is a unique opportunity to develop legislation or joint activities in working conditions made by the aviation industry for the air traveling industry. The social dialogue bases are principles of confidence, investment in people, and social progress. Social Dialogue refers to the discussions, consultations, negotiations, and joint actions undertaken by the social partner organizations representing employers and employees in the aviation sector. Moreover, it is a great chance to recognize that the Aviation industry is one of the drivers for economic growth in all industrial sectors in Egypt and accepts that there will be a need to develop increased capacity in the Air traffic management system to meet these requirements to increase incomes sustained and reduce the impact on the air travel business. This Directive may have an impact on the daily working practices of air traffic controllers. The social partners should be informed and consulted appropriately on all measures having significant social implications. The Egyptian social partners agree that future challenges can only be met and overcome by employees and employers working together to find solutions. The involvement and the

participation of the Trade Unions during the process of establishing national policy are critical tools for the project's success.

6.11.1 The positive impact of the Coronavirus pandemic on global air pollution

After a few months of paralysis of the global economy due to the Corona pandemic, and the commitment of citizens to forced home isolation for a few weeks, it appears that, at least for the present moment, governments have not been able to prevent the spread of the pandemic around the world. As in many countries of the world, the government has to deal with how to revitalize the economy, protect workers, and allow work in space. The year without worsening the pandemic.

We may see this issue with hope and concern. Hope stems from the fact that the Corona crisis has opened the way for environmental reforms, without which any progress recorded would have taken years and perhaps decades. The anxiety is because the emergence of the situation could have a "pendulum effect" that will move with the maximum force of the engines of a polluting economy that has no hope for a sustainable life. Can the crisis be a real opportunity, and can we make the slogan "crisis-opportunity" an objective reality.

The relationship between environmental protection and industrial activity are closely related, and we can observe this clearly in the aviation sector, as no one can deny the link between aircraft movement at airports, high concentrations of carbon dioxide and nitrogen emissions, which pollute the air and affect human health in the first place. On the bilateral relationship (environment, health), governments worldwide must be called upon to tighten environmental regulations and laws to deal with health crises like Corona. In addition to the issue of air pollution.

Against this background, environmental organizations stress health and call first and foremost to seize the opportunity to emerge from the crisis in favor of taking measures that contribute to providing an environment that allows humanity to better deal with the current epidemic, future epidemics, and other concerns, especially the climate crisis. Putting this issue on the agenda must be based on the fact that the relationship between the environment, public health, and epidemics - such as Corona - is a direct one. We can consider the Corona crisis as a wake-up call and, thus, a comprehensive review of the economy's structure and government ministries.

A complex crisis like Corona includes many actors, and many dilemmas await municipalities around the world. For example, when and how can transportation be restored to the city? Does the justified fear of congestion in public vehicles, buses, and trains mean allowing private

transportation to reoccupy the streets, and thus making many efforts to allocate a large number of roads to pedestrians? In Europe and the United States, some local authorities announced that they would seize the opportunity to remove cars from city centers and expand sidewalks and bike paths at the expense of private vehicle routes.

For example, in Milan, Italy, an ambitious plan called "Open Roads" has already been announced, under which the municipality will make adjustments, according to this pattern, to 35 kilometers of streets. Milan Deputy Mayor Marco Granelli recently explained the principle of this plan to the Guardian: "We have worked for years to reduce car use. When everyone travels in cars, there is no place left for movement. We shall develop the economy differently than it was before [52] (Comune, n.d.)

New radical thinking in the United States and in the presence of the Corona crisis with what is known as the "shelf plan" to get out of the problem - specifically (GND) "Green New Deal," that is, the "Green New Deal." The plan addresses public investments on a large scale to move to a circular, green economy free of fossil fuels (gas, oil, and coal). The original "New Deal" dated back to the 1930s (during the Great Depression) included a significant environmental component. At the time, the US government employed unemployed people to plant a billion trees; Establishing the American tourist trails and parks as part of the "New Deal" components. When we look at a way out of the current epidemic crisis, we can find an opportunity to save people from unemployment and make a leap towards the green. [53] (Wikipedia, n.d.)

Complete closure (total quarantine) that all countries of the world follow to limit the spread of the Coronavirus (COVID19), which has claimed more than hundreds of thousands of deaths across the globe, as well as the number of infections that exceeded two million across the world, and sparked a global panic in addition to It dealt a direct blow to the worldwide economy. On the other hand, it had a positive impact on human life.

Some believe that this economic blow has a lively character because it caused a decrease in industrial activity, which reduced air pollution and saved thousands of lives that were dying annually due to air pollution.

Satellite images confirmed that the pollution cloud had decreased its levels in many European countries led by Italy, France, and the United Kingdom. Milan's city also witnessed a remarkable decrease in nitrogen dioxide levels gradually after entering the town in a quarantine that paralyzed all economic sectors. [54] (Independent, n.d.)

The United States of America was also among the countries that witnessed a decrease in the level of pollution, New York, where pollution levels decreased by about 50 percent compared to the same period last year, and there was a sudden decrease in greenhouse gas emissions,

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coinciding with the closure of factories, transportation networks, and companies. [55] (NASA, n.d.)

Emissions satellite images show in China have decreased by 25 percent at the beginning of this year since people stayed home and closed factories operating with polluting energy sources [56] (NASA, n.d.)

We may be pessimistic about the return of conditions as before Coronavirus's appearance, which may increase pollution rates to a higher level than before due to the quest to compensate for the losses accumulated due to the closure. Furthermore, we are increasing transportation, including the civil aviation sector, in expanding this pollution and increasing harmful emissions. Others believe that the Corona epidemic's impact on the environment will not be as long-term as the impact of the previous global crisis, as demand for oil products, steel, and other minerals decreased.

Still, these products' stock reached an unprecedented level, and production will soon recover after the epidemic recedes. Just as the emerging "Corona" virus had a positive role in improving air quality and limiting the destruction of the environment and the climate, it had other positive parts in our lives. If we searched for them, we would find our minds incapable of understanding what is happening in this universe, and we would realize that we must not stand in front of some disasters. So, our mouths sank, waiting for us to come out of them to return to our first journey of destroying the earth and bringing destruction to our planet. Deceived by our economic, industrial, and military power, which today stands helpless in front of a small virus that we cannot see with our naked eyes, kills people and prevents them from achieving their little wishes, and prevents them from practicing their habits. They would also practice them under strict restrictions and conditions, such as enjoying a cup of tea or coffee in a cafe inside a large shopping mall today.

It has become a deserted virus that has now imposed its laws on all human beings and teaches them how to live. We see how many behaviors we need to improve before viruses can intervene to improve our quality of life, not just the quality of the air we breathe. Several scientists worldwide agree that the current global situation resulting from the Coronavirus may significantly impact our approach to pollution shortly. They call on the world to learn from the lessons once we face this crisis and rethink air pollution. Here in Egypt, the Ministry of Environment revealed, through an Egyptian newspaper, that there has been a marked decrease in the concentrations of air pollutants in some Egyptian governorates, with a significant

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reduction in traffic and other human activities in the country, following the precautionary measures taken by the state to control the Coronavirus pandemic »Novelty.

The authority data showed a 36% decrease in the average nitrogen dioxide compared to the six weeks before conducting tests, due to the decline in traffic, as the transport sector is one of the primary sources of nitrogen dioxide, and significant decreases in other pollutants associated with road transport, such as Volatile organic compounds and carbon monoxide. [57] (News, n.d.)

These figures and data published by the newspaper, citing the Ministry of Environment in Egypt, show the impact of human activities on the environment and calling on relevant government agencies at the general and local levels to shift to a green, clean. A more sustainable economy that improves air quality and reduces climate change has become an urgent necessity.

6.12 ILO recommendation to mitigate the impact

For good restart and safe operations, the aviation authorities should review the ILO recommendation of the Employment and Decent Work for Peace and Resilience, 2017 (NO.R 205) carefully. It holds all dimensions (health, social, and economic). It designs effective strategies and policies to mitigate the socioeconomic consequences of the crisis, protecting workers and their families, especially the most vulnerable, from losing jobs and income and enterprises from bankruptcy [58] (ILO, n.d.)

Also, it gives us all crisis response measures to be developed and promoted through gender-inclusive social dialogue and for Members to recognize the vital role of employers' and workers' organizations in this respect, considering the Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87), and the Right to Organize and Collective Bargaining Convention, 1949 (No. 98). Nevertheless, it is such a sophisticated crisis. We started with a lot of consultation and mediation between the ministry of civil aviation(as a national owner) and workers representatives to justify the significant harm of that recession and work side by side with the government. The tripartite constituents can make a good policy design and strategies for crisis response and safe recovery and trust to overcome the economic impacts. [59] (ILO, n.d.)

CONCLUSION

Since the beginning of last March, the Corona pandemic's emergence and spread have affected the Aviation sector tremendously than any other sector. Initially, the sector suffered from the claims of the employees and low aviation activity that were paying their salaries, so the sector in Egypt resorted to the use of Government procedures that helps the relationship between the sector and employees and to keep our national high skilled employees in this sector and protect them also from infection for suitable restart.

As air transport services are part of the critical infrastructure, it has to be an aviation professional to remain fit and reduce exposure to the broadest extent possible. However, there is a real risk that pilots, Air Traffic Controllers, maintenance, airport workers. ATM professionals will contract the virus leading to isolation and possible quarantine measures. It puts unprecedented challenges on the Air Navigation Service Providers and staff. The body of systems critical infrastructure networks and assets to their continued operation must ensure the security to a given nation, economy, public health, and safety.

The government or employer should impose certain restrictions (e.g., quarantine or shadow teams), follow them strictly. The health of work, colleagues, family, and neighbors depend on it. Like any other citizen, the aim is that air transport services personnel does not contract the virus. Putting different measures in place and guiding most nations by the public health authorities' rules and regulations. Aviation workers Personnel shall pay particular attention to these recommendations.

COVID-19 is impacting the dynamics between airline operators and all the actors of the aviation supply chain. Part of that is the impact on the interface, communication, and operating environment between pilots and ATCOs. Considering factors such as training and recency, human factors, and varying traffic levels, airlines and ANSPs will be looking at ensuring continued safe operations as traffic levels build up.

This work addressed some of the potential challenges related to the new environment for pilots and ATCOs and discuss the best practices that could be adopted to ensure a safe restart of operations at different airports are. In the aviation industry, economic regulation implies that the new 'rules of the game' must be:

-      Sustainable and thereby compatible with the long-term social, economic, and environmental needs of the industry;

- Measured to the extent that any regulations should not over-burden the industry in 'red flag' but at the same time providing protection for employees, passengers, and other interested parties;
- Accessible to the input of all stakeholders;
- Establish clear lines of Responsibility for various activities or the provision of different services;
- Targeted towards critical areas of activity such as training, safety, and security.

 In a broader context, the purpose of regulation should be to promote 'fair,' not 'free' competition, both in the product and the labor market. A practical regulatory framework for fair competition requires compliance, legitimacy, and trust. Achieving legitimacy can only be through a democratic process – hence the importance of involving all potential stakeholders, especially employees, and there must also be effective methods of accountability that are open and transparent. Most importantly, trust can be achieved by creating shared norms and repeated contacts (via social dialogue). Thus, if the trust is to become a valued resource in its own right, leading to high levels of productivity and lower transaction costs, there must be a commitment to job security and a robust institutional base that provides (statutory) rights for consultation, participation and employee representation. In summary, the industry and its workforce's challenges demand a new regulatory regime that can only be created and sustained through social dialogue.

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(59)   https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C087

(*) Personal Interview

APPENDICES

(1) <u>Annex 2</u>

Ministerial Decrees regulating medical examination, compensation, etc.

1. Ministerial Decree No. 133 for 1983 concerning Regulations Governing Health Fitness, on Which Pre-placement Medical Examination is Carried Out.

2. Ministerial decree No. 63 for 1976; concerning specifications of chronic diseases deserving a compensation equal to full salary during the whole duration of illness. The Decree was modified by another No. 695 for 1984.

3. Ministerial decree No. 215 for 1977; concerning the provision of medical judgement (arbitration) committee and its working regulations.

4. Ministerial decree No. 218 for 1977; concerning regulations for implementation and periodicity of periodic medical examinations, and adopting pre-placement examination procedures. The decree was modified by the Decree No. 78 for 1978.

5. Ministerial decree No. 239 for 1977; for conditions and regulations concerning diseases due to exhaustion and over-work, to be considered as occupational injuries deserving compensation. The Decree was modified by another No. 136 for 1980 and further modified by the Decree No. 36 and 161 for 1982.

6. Minister of Health decree No. 259/1995 concerning identification of chronic diseases requiring exceptional vacations with full salary or compensation until the patient is cured or his condition settles.

7. Minister of Health decree No. 179/1985 concerning rules of insurance against illness, injuries and dangers at the end of medication and percentage of disability

8. Ministerial decree No. 266 for 1980 concerning Identification of Chronic and Hopeless Diseases Causing Total Disability (Handicapping).

9. Ministerial Decree No. 142 for 1967 concerning Provision of First Aid Equipment and Appliances in the Working Facilities by the Work Owner, With Their Specifications Adopted by the Health Insurance Organization.

10. Ministerial Decree No. 174 for 1986 concerning Regulations Concerned with Licensing Personnel and Establishments in fields of Pest Control.

11. Presidential Decree No. 864 for 1969 concerning Establishing a Higher Committee Concerned with Protection of Ambient Air. The Decree was modified by the Decree No. 338 for 1975.

12. Ministerial Decree No. 470 for 1971 concerning Standards for Air Pollution Inside and Outside Industrial Facilities and Related Units.

13. Ministerial Decree No. 140 for 1976 concerning Identification of Lower Limit for Quality of Provided Health Insurance Services.

14. Ministerial Decree No. 141 for 1976 concerning Conditions and Situations for Provision of Rehabilitation Services and Provision of Artificial Limbs and Other Rehabilitation Equipment.

15. Ministerial Decree No. 393 for 1977 concerning Conditions and Situations Must be Adopted for Licensing Work Owners to Provide Medical Services for Their Insured Employees in Cases of Injuries and Illnesses.

16. Ministerial Decree No. 858 for 1981 concerning Adoption of Regulations Concerning Health Insurance on Workers in Private and Public Sector Facilities Employing from 5 to 499 Workers in All Governorates. The Decree was modified by another No. 160 for 1982.

17. Ministerial Decree No. 553 for 1983 concerning Adoption of Regulations Concerning Health Insurance on Workers in Private and Public Sector Facilities Employing from 1 to 4 Workers in All Governorates.

18. Ministerial Decree No. 804 for 1981 concerning Standards for Adopting Health Insurance Regulations, including Therapy and Health Care, on Families of Insured Workers as well as on Retired Workers.

19. Ministerial Decree No. 405 for 1984 concerning Standards and Limits Must be Provided for Therapeutic Systems Providing Services for Their Employees.

(Table No.1 amended to Law 79 for 1975 and last medications issued by the Ministerial Decree #1/ 2004)

Lead poisoning and sequels Mercury poisoning and sequels Arsenic poisoning and sequels

Antimony poisoning and sequels

Phosphorus poisoning and sequels

Benzol (benzene) poisoning and sequels

Manganese poisoning and sequels

Sulphur poisoning and sequels

Chromium ulcers and sequels

Nickel ulcers and sequels

Carbon monoxide poisoning

Cyanide poisoning and sequels

Poisoning by Halogens and sequels

Poisoning by Petroleum and gases

Poisoning by Chloroform and carbon tetrachloride

Poisoning by Aliphatic hydrocarbons and other halides

Pathological effects of Radium and other ionizing radiation.

Primary skin cancer and chronic inflammation and ulcers to skin and eyes

Effects on eyes due to heat and sequels

Pulmonary Dust Diseases (Pneumoconiosis) due to silica (silicosis), asbestos (asbestosis), talc (talcosis), cotton dust (Byssinosis)

Anthrax

Glanders

Tuberculosis

Infectious disease in fever hospitals

Beryllium poisoning and sequels

Selenium poisoning and sequels

Diseases and manifestations due to abnormal barometric pressure

Diseases and manifestations due to exposure to hormones

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Occupational noise- induced hearing loss (deafness)

Segmental body Vibrations affecting upper limbsí hands and wrists

Poisoning by nitrates, nitrites, and nitroglycerine

Cadmium poisoning and sequels

Poisoning by alcohols, glycols, ketones and their different types and sequels Diseases resulting from non-ionizing radiations, e.g., ultraviolet and infra-red

Poisoning by pesticides.

(2) Annex 5

List of Abbreviations

AEA Atomic Energy Authority

CAPLF Central Authority for Protecting Labor Force

ECIS Egyptian Common Information System

ECPIS Environmental Contingency Plan Information System

EEAA Egyptian Environment Affairs Agency

EEIS Egyptian Environmental Information System

EFI Egyptian Federation of Industry

EGP Egyptian pound

EHSIMS Egyptian Hazardous Substances Information and Management System EMRO Eastern Mediterranean Regional Office

EMS Environmental Management System

EOSQC Egyptian Organization for Standardization and Quality Control ER Executive Regulation

ERSAP Economic Reform and Structural Adjustment Programme

ETUF Egyptian Trade Union Federation

GAOSH General Authority for Occupational Safety and Health

HIO Health Insurance Organization

IHA Industrial Hygiene Administration

ILO International Labor Office (Organization)

IPCS International Programme for Chemical Safety

IPIS The Industrial Pollution Information System

ISA Industrial Safety Administration

ISO International Standardization Organization

MOA Ministry of Agriculture

MOHP Ministry of Health and Population

MOI Ministry of Industry

MOMM Ministry of Manpower and Migration

MSEA Ministry of State for Environmental Affairs

NIOSH National Institute of Occupational Safety and Health

NIS National Institute for Standards

NOSI National Organization for Social Insurance

NRC National Research Centre

OHA Occupational Health Administration

OHD Occupational Health Department

OSH Occupational Safety and Health

TIMS Tabbin Institute for Metallurgical Studies

TLVs Threshold Limit Values

UNDP United Nationsí Development Programme

UNEP United Nationsí Environment Programme

WHO World Health Organization

(3) Annex

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ECAA
Safety Information
NO.2020-03-01
Issued March 2020

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(5)

ECAA SAFETY DECISION 2020-02
Date of Issue: March   , 2020
SUBJECT:
FLEXIBILITY PROVISIONS DUE TO NOVEL CORONAVIRUS
(Pilot license and others licenses)

REFERENCE PUBLICATIONS:
1- Law 28 and its amended
2- Egyptian Civil Aviation Authority ECAR's
3- SAFETY INFORMATION 2020-03-01

APPLICABILITY:
This Safety Decision shall be applicable for a period of three months
from the date of issue, unless otherwise specified.
INTRODUCTION:
The socio-economic impact of the novel coronavirus is yet to be
assessed. It has already resulted in drastic restrictions and arrangements
preventing licensee holders from timely completing the necessary
training and checking or medical evaluation etc. and hence ensuring that
their ratings and other privileges are revalidated prior to expiry.
As a result of the aforementioned unforeseen circumstances, the ECAA:
a) found it necessary to reduce the severity of the disruptions; and
b) would like presents today an immediate response to mitigate the
socio-economic impact of the COVID-19 outbreak while assuring an
acceptable level of safety.

This Safety Decision is issued with some of requirements to adopt
additional provisions to:
a) provide flexibility to licensee holders when revalidating the privileges
of their licenses .
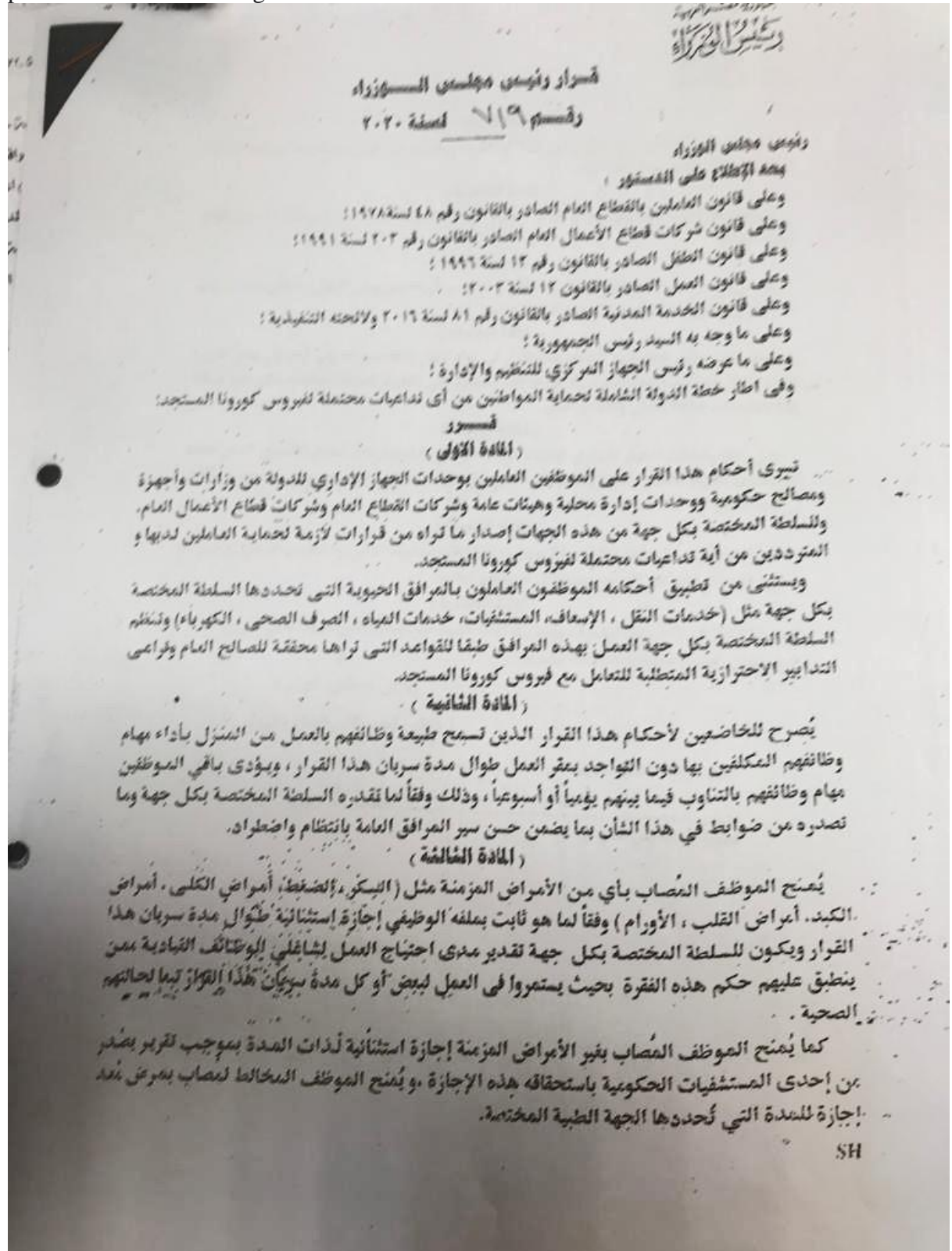b) defer the ECAA fee payments for a period of 3 months .

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(4) Decree number (719)/ March 16 2020 letter to all work place in Egypt from the prime minister office original letter

جمهورية مصر العربية

رئيس الوزراء

٢

(المادة الرابعة)

تُمنح الموظفة الحامل أو التي ترعى طفلاً أو أكثر يقل عمره عن التى عشرة سنة ميلادية إجازة استثنائية طوال مدة سريان هذا القرار.

(المادة الخامسة)

يُمنح الموظف العائد من خارج البلاد إجازة استثنائية لمدة خمسة عشرة يوماً تبدأ من تاريخ عودته للبلاد.

(المادة السادسة)

يُحظر إيفاد جميع الخاضعين لأحكام هذا القرار للتدريب أو لحضور ورش العمل، طوال مدة سريان هذا القرار وتُغلق كافة البرامج التدريبية السارية حاليا.

(المادة السابعة)

يُحظر سفر جميع الخاضعين لأحكام هذا القرار فى مهام عمل أو لحضور تدريب أو ورش عمل خارج البلاد طوال مدة سريان هذا القرار إلا فى حالات الضرورة التي تقدرها السلطة المختصة بكل جهة وذلك وفقاً لمقتضيات حاجة العمل والصالح العام.

(المادة الثامنة)

على كافة وحدات الجهاز الإداري للدولة وشركات القطاع العام وشركات قطاع الأعمال العام اتخاذ الإجراءات اللازمة لتطهير ونظافة وتعقيم مقار العمل وفقاً للإرشادات التي تصدر من وزارة الصحة والسكان فى هذا الشأن.

(المادة التاسعة)

تكون الإجازات الاستثنائية الممنوحة بموجب هذا القرار مدفوعة الأجر، ولا تحسب ضمن الإجازات المقررة قانوناً أو تؤثر على أي من مستحقات الموظف المالية.

(المادة العاشرة)

ينشر هذا القرار فى الجريدة الرسمية، ويُعمل به لمدة خمسة عشر يوماً تبدأ من اليوم التالي لتاريخ نشره، وعلى جميع الجهات المختصة تنفيذه.

رئيس مجلس الوزراء

(دكتور/مصطفى كمال مدبولي)

صدر برئاسة مجلس الوزراء فى ٢١ رجـــــــب سنة ١٤٤١هـ
الموافق ١٦ مـــــــارس سنة ٢٠٢٠م
صورة مرسلة إلى السيد /

رئيس
هيئة مستشارى مجلس الوزراء
(المستشار/ شريف الشاذلي)

SH

الدراسات الإستراتيجية والسياسية والاقتصادية

D.A.C

المركز الديمقراطي العربي