

NEW TRENDS OF MANAGEMENT AND LOGISTICS IN AIR TRANSPORT

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Abstract: *The management and logistics in air transport offers lots of incentives for the revision of current views on the development of the modern traveller hubs and their roles. The article is a brief introduction into understanding airports and their periphery as an integrated logistics system (external and internal), its potential of services provided including retail partners and opportunities for further development of airport terminal multisystems. Air transport consists of three basic elements - air carriers, air traffic control services and airports alone. The scope of air transport is assessed on the basis of traffic and transport performance.*

Keywords: *logistic, airport, potencial, system, travel hub, integrated logistics system .*

1. LOGISTIC TRAVELLER HUBS

Airports are usually built in less urban locations, yet hundreds of thousands to millions of passengers travel through them. Consequently, they are to offer comprehensive services for customers meeting the highest level of requirements. Passenger expectations are growing rapidly not only in respect of airport operations, but also of the retail partners under non-aeronautical activities. Such a hub of transport, logistics and traveller services, in due proportion to the development of its regional facilities should provide a pleasant space and to have appropriate goods services and goods open offer [1].

During the recent decades the look of the air terminal services has changed dramatically. Airports are clients not only to airlines but also passengers who prefer good quality, fast service, minimum delays, or spending their time waiting in an acceptable way. High on the list are comprehensive services from transport, parking, fast check-in, high-quality food, interesting shopping, active or passive leisure, accommodation, sufficient informational awareness etc. The pressure to extend business, hotel and restaurant services is increasing from year to year, turning development of such potentials at older airports located in densely populated areas into a burning issue. Shops, restaurants and hotel services are considered particularly useful complementary to services provided by air carriers thus positively influencing customer satisfaction. Temporary accommodation before departure, going out for shopping in the modern shopping malls, duty free shops, or having meal in good restaurants, and spending time in the leisure areas will become standard in the years to come. Apart from widening the offer of complex services, retail partners and have also become an important source of revenue for the airports.

The logistical potential of travel hub airports is to make best use of sub-contracting chains and service providers, transport and hotel-restaurant infrastructure in order to catch up with the future requirements of customers. Airports need to be designed in line with the new, retail concepts or

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chains, as they represent an important transport hub and became the guarantors (or stimulators) of growth in tourism. Large car parks, car rental and medical equipment in the future will be a natural part of landside areas. Airports are to adopt a modern, functional and architecturally appealing design with multifunctional potentials [2]. Then they will be required to perform two functions:

- to provide an added value to travellers and other visitors to the air terminal by way of offering a comprehensive range of goods and services to passengers waiting for connections,
- to generate additional visitors from the catchment area and thus more profit for the retailer and the airport.

In addition to it, to increase the potential of such an integrated logistics system for managing airport incidents at the airport and its vicinity (calamity, accident or distress, terrorist acts, accidental oil spills, fires, etc....).

2. AN INTEGRATED LOGISTICS SYSTEM AND ITS DEVELOPMENT

Integrated logistics system airport (INLOGSYS) is a multisystem [3], which can be divided into internal and external subsystems - shown in Figure No.1:

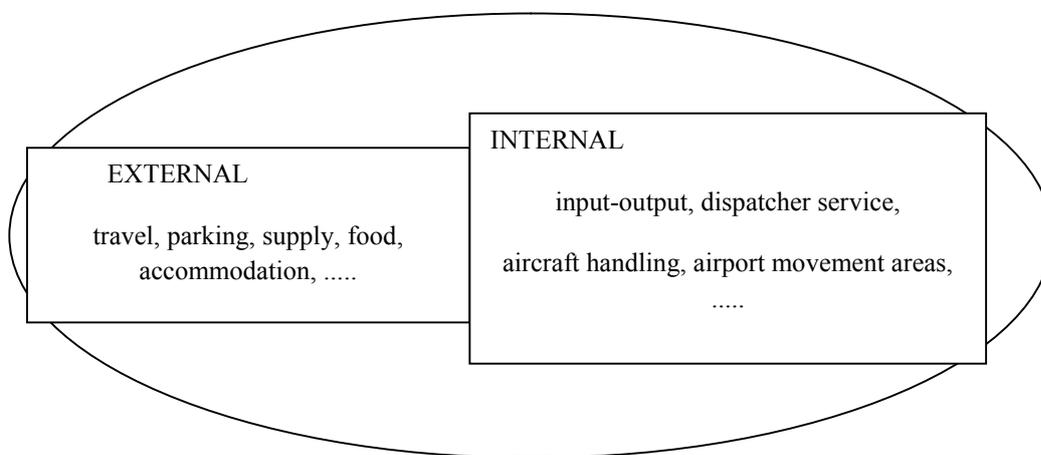


Fig. No.1 INLOGSYS

The INLOGSYS is, firstly, to enable economically efficient operation and, secondly, ensure the timely management of extraordinary incidents (EI), or crises (CS). The landside area of an airport, in terms of logistics, must be used for completion of commercial, residential, parking, restaurants and recreational centers, which are also expected to offer solutions in case of extraordinary incidents such as missed or cancelled flights.

3. AIRPORT INLOGSYS

INLOGSYS airport provides:

- The adoption and rapid processing of passengers /goods transported possibly/,
- Transport of passengers and goods,
- Minimizing the cost of increasing service quality,
- To avoid critical situations and to ensure safety,
- Attraction of customers with higher standards and good service
- Complete protection of potential customers,

Considering the wide range of activities, the integrated logistics system of airport /INLOGSYS/ could be regarded as a special kind of system - multisystem under a set of systems, defined in one logistical place according to various aspects (3). Then the INLOGSYS airport shown in Figure No.2 is composed of these systems and is characterized by the following:

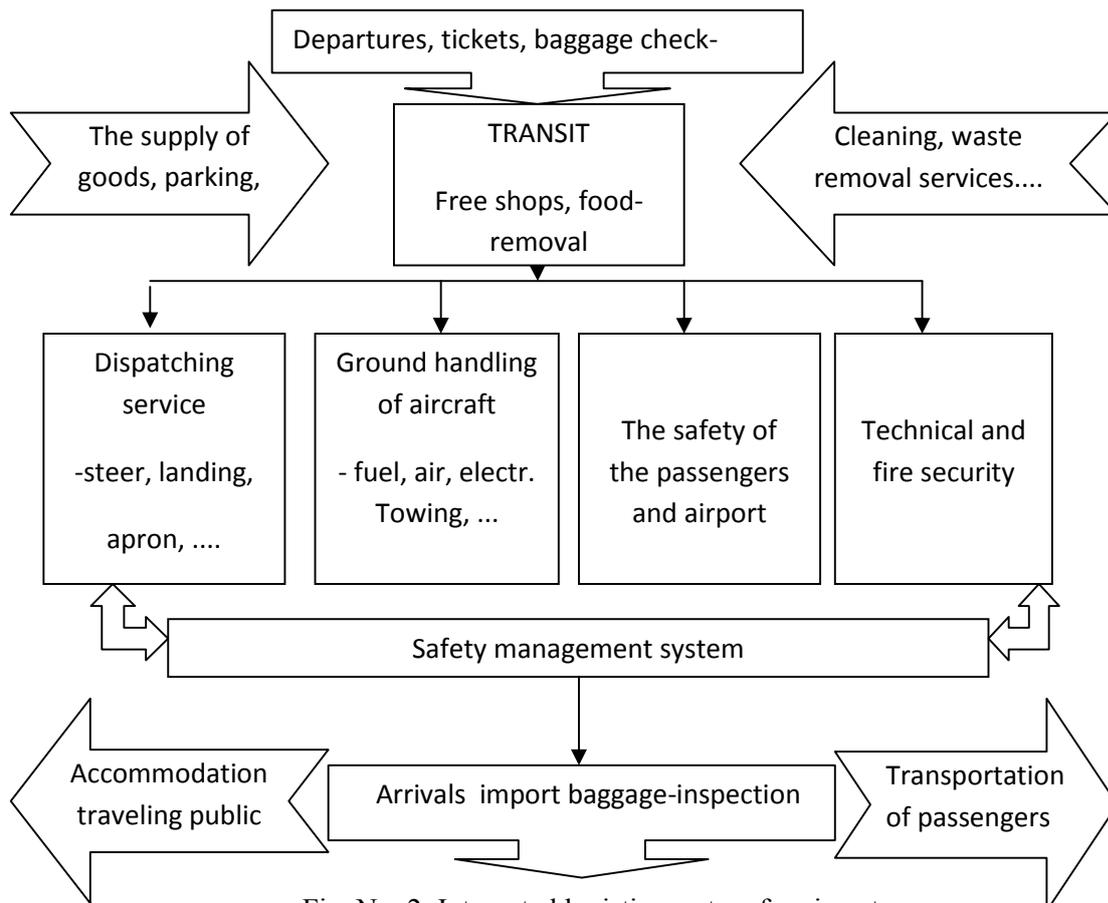


Fig. No. 2: Integrated logistics system for airport

- A system of technical - technological, where the elements of this system, various tools and equipment, buildings, traffic routes, together with a necessary staffing;
- Management system that ensures the efficient operation of any controls on the technical - technological system, but also the other subsystems, thereby affecting their behavior;
- Information system - ensuring the collection, processing, transmission and storage of information, a priority for management system;
- Communication system - consisting of communication, transmission equipment, automation and computer technology;
- Financial system - consisting of financial resources, financial transactions and financial flows, allowing the economic existence and functioning of the entire multisystem.

This year's winter has shown that crises may develop at airports not only due to terrorist attacks or threats to passengers or staff, but also in cases like extraordinarily cold weather. Airport closure, air traffic disruption, lots of passengers unchecked, accumulation of baggage, the problem of providing alternative accommodation and comprehensive care for passengers, as well as liquidation of the high snow, ice on the apron, de-icing of aircraft are sources of a quantity of extremely difficult tasks to be faced and managed by logistics and the systems.

INLOGSYS are therefore to be capable of providing a range of handling (business and technical) services to airlines as well as passengers. Airports, in terms of logistics, are non-productive logistics companies, providing a wide range of services for passengers and airlines. The airport logistics systems is expected to provide the mentioned range of services perfectly and to the standards set. In order to function optimally, the system should be integrated and comprehensive, with sufficient airport potential.[5].

Airport potential (as a measure of availability) is given by the number of:

- - runways (RWY),
- - taxiways (TWY),

- - stands and aprons (APN) and their size, and services:
 - air traffic services (ATS) with approach control (APP) and aerodrome control tower (TWR)
 - business and operating segment, ground-handling for aircraft (AHU) and passenger processing units (CHECK-IN), as well as other factors (transport options, parking, food, accommodation, medical services, leisure and shopping,...) Then, the functional potential of the airport (AP) can be written in the form:

$$AP = f(RWY, TWY, APN, ATS, APP, TWR, AHU, CHECK-IN,)[1]$$

Recent experiences show that lack of adequate of servicing, catering, parking and accommodation services makes it impossible to fully satisfy the passengers and effectively solve any critical situation. Moreover, the European Commission, in its 7th Framework Programme 2013, with regard to airport logistics, gives special emphasis to the following activities [4]:

- increasing time-efficiency of air transport,
- improving safety and customer satisfaction,
- increasing cost-effectiveness.

It is therefore about more efficient use of the existing potentials of airports and improved utilization of aircraft (ensure 3x higher turnaround of aircraft !!!). Airport operations must be oriented to users and customers (security, full service, customer service ,...).

The INLOGSYS of an airport must create a synergic effect, find all-round, optimal solutions and reduce operating costs to a minimum.

CONCLUSION

Further development of air transport largely depends on the more efficient use of the existing potentials and on completion of the airports to increase economic efficiency. The solution lies also in finding new ways and prospective methods of operating airports as integrated logistics systems to achieve higher economic efficiency and competitiveness in air transportation. Logistical reconciliation of all the key aspects affecting the economy of the airport and complex and optimization of all processes and INLOGSYS activities will have a major impact on improving the economic efficiency of airport security and customer satisfaction and increase the time efficiency of air transport. The investigation of airports as an integrated logistics system, defining the economic performance of the airport, value and timing analysis of current methods and practices of airport operations, comparing the economic performance of subsystems and implementation of perspective methods of airport operation as INLOGSYS and recommendations for improving economic efficiency and increased competitiveness can make a synergetic effect desired by 7th FP in the development of aviation and air transport.

REFERENCES

- [1] European Commission / Community Research / - Výskum v oblasti aeronautiky a leteckej dopravy. Druhá výzva – 2008 – DG výskum. DG RTD-H.3 Aeronautics -1-17.
- [2] Koščák, P.-Ferenc, J.: Organizácia a riadenie prevádzky letísk. TU - Košice 2010, ISBN 978-80-553-0356-7, 2010.
- [3] Viestová, K. a kol.: Lexikón logistiky. Bratislava 2005. Vydavateľstvo Ekonóm. ISBN 80-225-2007-1.
- [4] CEHLÁR, M., KYSEĽOVÁ, K.: Cost management - 2002. In: Transactions of the Universities of Košice. 4/2002. - Košice: Technical University, 2002 S. 52-61. - ISSN 1335-2334
- [5] PETRUF, M., FERENC, J., KOŠČÁK, P.: Airport integrated logistics systems in terms of the new trends in the development of aviation. In: New Trends in Aviation Development: proceedings of the 9th international scientific conference: Gerlachov - High Tatras, September 16.-17. 2010 Slovak Republic. - Košice : TU, 2010. - ISBN 978-80-553-0475-5. - S. 157-160.
- [6] PÚCHLO, J.: Potenciál cestovateľských uzlov. In Store Slovakia - 13. 12. 2010 /www.instore.sk/