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Challenges and development of Internet-based service application on airport environment

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Summary

The master thesis is a study of airport`s website`s information structure and challenges and trends of its development. Investigation of airport`s website information saturation is one of study aim. It includes a possibility to check what impact some physical factors of airport have on airport`s website`s structure.

A study is based on the investigation of 314 websites of airports, which are ACI Europe members. During their exploration the model of airport`s website will be built. The model will be used as a base for further investigation.

Virtual variables are defined by model`s elements, which were received during exploration of the sample. Physical variables are chosen randomly.

New concept "Information Saturation of Website" will be introduced.
Other principal concepts are given in literature on relevant subjects

Several standard statistical methods will be utilized for investigation of physical and virtual variables.

When study will be finished I expect to have a model of information structure of airport`s website which allows to classify information on airports website. Then overview of information saturation of airport`s websites will be made and an impact of physical factors of airport on airport`s website`s structure will be found.
Finally an attempt to identify trend and challenges of airport`s website, based on previous analysis, will be done.
Potential recommendation for future research will be given at the end of the study.

Contents

ABSTRACT

The air transport as any industry worldwide experiences the boom of informational technologies application. They develop rapidly. Today there are a great number of different informational technology fields and types. Each of them has its specific features and development and has its specific impact to different areas and branches. In fact, air transport is a leading industry of application of informational technologies and using all types of them more or less. One of them, Internet Based Service, was chosen for this study. The paper strives to analyze structure of Internet Based Service on airport environment, its challenges and to understand trends of its development.

Key words: website, Internet based service, website`s structure.

Introduction.

Globalization process increases a demand for air traveling. A few decades ago air travel was a privilege and today it is a necessity. Development of airport infrastructure has become a key component of the transport system worldwide. Today an airport is a complicated organism. Usually it encompasses a large area and functions. Modern airport cannot be managed without information technologies.

Most airports have small and independent information systems designed for different parts of the airport activity, such as passenger services, air traffic services and airport management system. Growing passenger's traffic, cargo traffic and informational flows intensity lead to necessity of effective interaction of all airport systems. From other hand, globalization process demands to enhance interactivity between airports worldwide as well as between different types of transports. It makes an appearance of generic information system, which will be common as for one airport as for airports worldwide, just a matter of time. There is a big opportunity that such system would use airport`s website as interface.

Moreover, all industries which applied web recourse are agreed at two points. First, Web-based service offers incredibly cost-effective methods of consuming and deploying of information and products. Second, it allows constructing, interchanging, controlling and managing information chains effectively. As result, depth penetration of web technologies in industries obviously creates new reality and new challenges.

Attempts to understand this new reality have been undertaken last decades. They result in a concept of New Economy. The concept described the phenomenon which was experienced due to intensive process of creating and disseminating informational technologies, their penetration into all spheres of society .The term "information age" and "informational economy" became broadly known due to Castells (Castells, 1996) and Marc Uri Porat (Marc Uri Porat, 1977). Further researches and practices demonstrate clearly that worldwide development is characterized by the formation of the information (virtual) space due to opportunity to apply global network Internet and Worldwide Web technology.

In fact, word “virtual” is losing its original meaning. For example, Web sites which were considered as something separated from reality, becoming a daily thing. Their functionality sometimes defines the reality more than anything else. It is almost impossible to predict how it will work in the future. But it is possible to say that Internet and web technologies have become an integral part of modern economy. As any integral part of system, it may affect all systems or some components of the system.

That`s why today researches attempt to comprehend the ontological aspect of web sites side by side with informational and economic benefits of web sites. They define Web site as “place”. As any place, a web site has certain localization and community with respect to the rest of the world and can be described by connections and flows since they do not exist in isolation in digital environments. Hence, “place” as a theoretical concept is comparable to that in traditional ones because digital environments also function as “places” for modern humans, which rely extensively on digital technology (Judy Yu Ying Au, 2008). This point of view complements and extends the concept of web site as complex phenomena which need to be analyzed and, for estimation of its potential.

In this study a narrow field of extending website`s application`s area will be investigated for airport industry. The aim is to explore website’s structure of different airports and to make a standard visual model of it, if it is possible. Next stage is to investigate nature of information saturation of airport`s website. This purpose includes a possibility to check what impact some physical factors of airport have on airport`s website`s structure and its information saturation.

The rest of paper is organized as follow. First chapter dedicated conceptual framework of thesis and literature which provide concept and theory and definitions which are necessary for study. Then Chapter 2 outlines research issue and methodology. Next one dedicated to building of information airport`s website model and its analysis process and findings. And finally last chapter dedicated to challenges of Internet base service and its application on airport environment

Literature review and conceptual framework

Theoretical concepts, theories and definitions, which are essential and relevant to this study, are given in literature review. They can be divided into two directions. From one hand it needs to understand what an Internet-based service is. Therefore a part of literature review covers researches and case studies which concern to Internet applications, website and web service. From other hand, a construction of informational structure of airport website implies to understand structure of airport activity. Therefore other part of literature review covers researches and case studies which concern to principal business relationship and airports services on airport environment.

Internet Based Service Concept

Historical development.

In historical 1991 the commercial use of the worldwide computer network linked millions of computer users in a common information system. Global network connects almost all major academic and government organizations of the world, universities and business centers, media and publishing houses. It forms a giant repository of data and knowledge in all branches. A great number of virtual libraries, archives and so on contain a huge amount of text, graphics, audio and video.

The Internet has become an integral part of modern civilization. It has a great impact on education, commerce, communications and services. It creates new forms of communication and education, commerce and entertainment. Network Generation is a social and cultural phenomenon nowadays. People open the door of a new information age where network technologies played a crucial role.

Internet emerged as the embodiment of a global repository of information and universal tool of information dissemination. American scientists Vannevar Bush and Theodor Holm Nelson researched ways to automate of human thinking process in order to develop finding and processing of required information. The work of these scientists was philosophical rather than practical, but their ideas created a basis of a hypertext concept. Norbert Wiener played important role in shaping the theoretical basis for future global information systems.

At the 50`s USA established a promising research projects Advanced Research Projects Agency (Agency-ARPA), which involved a computer simulation of military and political events. Talented manager and computer scientist J. C. R. Licklider persuaded the leadership of ARPA to focus on the development of computer communications and networks. In the 60`s networks between computers began to grow rapidly. The first users were the US military, and then became a university network and a network of academic institutions. Many companies and developers created software and equipment for local area networks of universities, research centers and military facilities. However, in the transmission of information between different networks appeared a problem of compatibility when computers just did not understand each other. Another disadvantage of large networks was their low resistance. An insignificant failure could paralyze the entire network.

The Agency ARPA tried to resolve these issues. In 1969 a network ARPANET became the basis for the future of Internet. The 1976 was developed Transmission control protocol TCP / IP, which has become the standard for the interconnection of communications and networks. ARPANET was the basis for the unification of local and regional networks into a single global system.

In 80`s Internet was used mainly by professionals. In 1990, programmer of European Organization for Nuclear Research (CERN) in Geneva, Tim Berners-Lee created a system which implemented the idea of a common hypertext graphical interface. He named its WorldWideWeb. Then the advanced version of HTML were combined a new programming language Java and the allowed to transmit color images, photographs, drawings and to use audio and animation on web-pages. So other important technology web service for network was created. Since the early 90's networks created by computer enthusiasts transferred to the private sector the commercial development began.

Thus Internet and web services created unique information and communication tool **Internet Based Service**. Today definitions of all technologies which was presented above, “Internet” or “WWW” or website, are used concerning Internet based Service. In this paper all of them will be used implying Internet based service concept.

Internet Based Service (Website). Definition and literature.

There are many concepts of a website which appeared for short period since first website was created. Website is a separate part of the web system. It has a unique address (URL). A Website can be static or dynamic. Typically web sites are organized in the form of hypertext inclusion of text, graphics, audio, video or animation. The interactive nature of website allows providing a dialogue between users and mutual activities. (Conviello, Milley, Marcolin, 2001). In combine with Internet technology web service creates the unique sphere of human activities which was defined as informational society and informational age. (Castells, 1996). Detail analysis caused the concept "web environment" (Hoffman, Novak , Chatterjee, 1995).) And finally website was defined as service tool (Frauenfelder, 2001).

Recently ontological aspect of web site was discovered. The concept is developed in researches which attempt to identify website as place (Judy Yu Ying, 2008).

Website (Internet based service) and reality.

Internet leads to rethink traditional definitions and categories of communication and information. The traditional communication is a transferring of information between the sender and the recipient. In other words, the basis of communication is well-known chain of Transfer – Information - Recipient. However, each element in the network is changing. Internet brings together the visual, audio, video, print and other aspects of the media. The Internet provides the necessary information at any level of interests of individuals or groups of people. Internet requires a dialogue, so-called feedback, rather than a monologue, which characterizes the traditional media. Interaction, dialogue and feedback among the hundreds of user's implement through e-mail, information boards, forums, chats, and teleconferences. There are no mediators in WWW.

All these features were a reason for appearance the term "cyberspace" or "virtual space" which was introduced at 90's. The term defined virtual reality.

English scientist M. Betty in the middle of 90`s. introduced the term "cyberplace" which is usually interpreted as part of real word which is affected by cyberspace.

Such transitional zones can be highlighted within cyberspace too. Computer Technology space in cyberspace continues as a combination of software and technology protocol. Hence analogue of cyberplace is informational submission of information in cyberspace (the Internet) of real objects (such as Web sites of companies and organizations).

Actually whole information space of computer networks is a reflection of real space. But at the same time a number of objects have no analogue in the real world. They are completely virtual (e.g., the various internet services, chat rooms, ratings sites, search engines, etc.) and thus they cannot be explained by the concept of information projection of the real space. This phenomenon was defined as virtual reality concept. In 1989 Jaron Lanier, one of the leading specialists in the field of computer technology, introduced the concept. In his interview he stressed that Internet brings understanding of the physical world to a new level.

A virtual reality means that the reality is replaced by an artificial world of the computer.

One of the most important characteristics of virtual reality is real time. The most complex modern virtual realities can extent the reality. A complete replacement of the true physical reality of virtual reality it impossible yet but some characteristics of is modeled (for example architecture and engineer projects and so on where user can to change the objects, observed and research them). Due to virtual techniques complex data inputted to the compute become visible and received form and the quality of reality.

It is clear that virtual reality is not even fully developed form and it has a tremendous impact on person and society.

Internet-based service impact on reality.

Internet based services is transforming economic industries into information-based activities. Fundamental changes happened in every aspects of modern business and led to developing new industries organization. But the affect of Internet-based services on different industries is different. Some of businesses were satisfied by establishing website and offer internet services as additional channel. Others transform in virtual form and offer their services and product only in virtual form.

Indeed this transforming causes significant re-engineering of the service industry. Architectures, supporting tools and devices of Internet based technology create principally new approaches of interacting with physical world.

Advertising become to be more targeted and aggressive. In the same time low entering barriers allow new participants to access without advertising or promotion, for example so called social network sites. Application of Internet-based service creates principally new approaches for marketing. (Louis, 2001) Interactive nature of information environment introduced possibility to react fast and receive response to economic activities. Another benefit of Internet application is relatively low cost marketing activities. Marketing concepts underwent evolutionary development. These changes determined and continue to determine the status and interaction in the marketplace such subjects as the producer (seller), the consumer (buyer) and the state (government). New business models were adopted due to Internet based application. It is important to define them in order to qualify information on airport website correctly.

B2B. Concept and literature.

A concept B2B is important in order to qualify information of airport website correctly.
It describes "business-to-business" relationship both online and offline, but mostly is applied to business relationships which are realized thought electronic data interchange. Financial transfers, online exchanges, integrated business network, auctions, delivery of products and services are transactions that use the Internet as a delivery vehicle.
The concept came in use in the 1990`s when Internet started to be utilized for electronic commerce. New types of businesses appeared in the so called information age when business on-line affected industry and whole society world. A lot of research attempted to describe and create business models as well as IT infrastructure for e-Commerce. First Internet was applied as a new marketing and sales platform and interdependence between overall organizations and firm structure provides B2B success. (Jap, Mohr, 2002).Then firms started to use the Internet as an effective mediator to support all business services. Concept B2B was defined finally when support of inter-organizational communication processes via Internet became popular.

According to Stuart Feldman, director of the IBM Institute for Advanced Commerce, B2B e-Commerce transactions are dominated by high business value, long-term relationships, complex business processes, and inter-computer communications. (Huemer, 2004) The key feature of B2B progress is cooperative strategy (Dai, Kauffman, 2003)

B2C. Concept and literature.

Another form of business which was developed due to e-commerce is B2C (business to customers). First company which applied a "pure" Internet business model was famous Amazon.com. There are some common forms of interaction between buyers and sellers in the segment of B2C.

The first model is based on the electronic mediation of the virtual trading point between the producers / distributors of goods and retail clients. The second is organization of the Internet unit of offline trade-service firm. This scheme of interaction between seller and buyer uses the Web as an additional channel of sales of goods / services. The third model which by the way is used for air e-tickets sale differs from previous two that the vendor provides a virtual account of buyers' preferences. The customer has the opportunity to choose any configuration of a product or a service package based on the proposed site set. Using this model in e-commerce allows to significantly reduce inventory in warehouses, and thus to obtain significant savings in costs compared to "natural" trading systems. The fourth model B2C segment is based on a collection of online store orders. The fifth model is the virtual auction. (McGann, Lyytinen, 2002)

Historically, Web-community began to form around online shopping and service companies for example, Amazon.com and eBay. Now Web-community can appear on offline platform. A good example is airport websites which provide online business for airport partners and other business participants acting on airport environment.

Aeronautical.

Two important concepts: aeronautical and non-aeronautical will be used for qualification of information on airport`s website. It is naturally to use them when the study concerns airport. Aeronautical and non-aeronautical processes and activities and distinguish

between them in air transport commercial activity. (McCarthy, McDonnell, 2004). The concept "aeronautical" used with respect to everything that can concern aircraft. Any activity at the airport which makes possible or is required for the operation concerning aircraft, is named aeronautical. The activities can contribute to or is required for the safety of such operations. These activities include air aircraft rental, sightseeing, sale of aviation petroleum products, aerial photography, aircraft sales and service, crop dusting, aerial advertising, aerial surveying, air carrier operations, taxi and charter operations, pilot training, skydiving, operations repair and maintenance of aircraft, sale of aircraft parts, and aircraft storage.

Aeronautical service concerns everything that can involve, make possible or is required for the operation of aircraft. Aircraft operations are usually conducted on the airport by a person or business that has a lease, license, or permit from the airport owner to provide such service.
This business or person are licensed and authorized by written agreement with the airport owner to provide specific aeronautical services at the airport. (City Council, 2005)

Non-aeronautical. Concept and literature.

"Non-aeronautical" concept came in use in opposition the concept"Aeronautical". A start of using it began with process of airport commercialization and has a significant impact of non-aeronautical biasness on airport environment (Papatheodorou, Lei, 2005).
There is a long list of non-aeronautical activities. Everything that not concern aeronautical activities can be in this list. The importance of non-aeronautical activities is very high today because financial analysis from different source and statistics clearly show that around 50% in average of airport revenues comes from non-aeronautical activities. Profit margin from this sector is also larger than other sector. Combination of some factors creates a promising potential market. First there are a large number of air passengers come from richer level of society. Then due to fly process, air passengers have a lot of free time at the airport. For example, duty and tax free shopping which are typically available to international passengers make airports very attractive place to spend money.

Information saturation. Concept.

Term “web saturation” is used in literature in terms of web design. It implies of saturation of web design with different attributes such as color, lines and text. Here this term will be used concerning information on website. Information saturation is introduced as a measure for description of information fullness on given website. 100% information saturation means that airport website contains all possible information which airport`s website can include according to the model of airport`s website information structure.

Research design.

Following chapter defines issues and methods for this study.

Research issues.

The aim is to explore website's structure of different airports and to make a standard visual model of it, if it possible, then to investigate nature of information saturation of airport`s website. This purpose includes a possibility to check what impact of some physical factors of the industry, in our case, airports, have on its website`s structure and its information saturation. Hence, there are three issues of study can be highlighted and three stage of study can be outlined.

First issue is to build visual model of information structure of airport`s website. It can be associated with next questions:

- How can information on airports website be classified?
- Does common information structure of airport`s website exist?

Second issue is to analyze information saturation of airport`s websites. It can be associated with next questions:

- How does information distribute among different airport websites?
- Why does information saturation differ from website to website?

Third issue is to detect impact of some physical factors of airport on airport`s website`s structure and its information saturation. It can be associated with next questions:

- Does impact of physical factors of airport on airport`s website`s structure exist?
- How do physical factors probably affect website information saturation?

Building of model of airport`s website information structure

There are a plenty of the graphical and user`s interface aspects of website design. In addition, a huge knowledge has been developed in the area of software development methodologies. However, there have been little studies conducted to examine informational website structure inside certain industry, or in other words what kind of information a website of certain industry contains and how this information can be classified. Therefore for this part of study en exploratory method is used. It implies that the investigator creates a field study within the environment where the phenomenon exists and then forms an opinion.

In this case the field study is done through data collection and by doing literature study. Every new type of information which is found during data collection phase is considered as a new structural element – Informational Block. Then new Informational Block is analyzed according characteristics and key features of airport environment in order to find its place in websites structure. Then it is added to the structure. Finally a model of information structure of airport website has to be built.

Quantitative description of information saturation.

Simple Frequency Analysis

The next phase of work is analyzing the configuration of airport`s websites information saturation. Simple Frequency Analysis is used in order to define how many websites contain certain informational blocks. Frequency analysis is particularly useful for describing of categories of data having yes-no response formats. This analysis involves constructing a frequency distribution, which is a record of the number of scores that fall within each response of informational block.

Cross Tabulation Analysis with Chi-Square Analysis and Pearson `s correlation analysis.

Last target is to find and analyze a existence of relationship between some physical factors and airport`s website structure. Cross Tabulation Analysis is chosen because of categorical nature of variables. It allows analyzing impact and statistical independence for information blocks and each physical factor separately. Independence between the variables represented in the contingency tables is tested with chi-square. SPSS is used for all statistic analysis. However, standard equations are given. The chi-square value is calculated using the following standard equation:

$$\chi^2 = \sum \frac{(fo - fe)^2}{fe}$$

The Chi-Square value above is derived from the sum of the observed values minus the expected values squared $(fo - fe)^2$ is divided by the expected value (fe). Clearly, as the x^2

equation demonstrates, if the observed values are equal to the expected values, the x^2 value is zero indicating no difference between what is observed and what is expected to observe based on the x^2 distribution probabilities.
For the chi-square approximation to be valid, the expected frequency should be at least 5.

If a chi-square and its associated tail probability (p-value) is significant for couple of physical and virtual variable, their contingency table is reviewed in order to analyze the association between two categorical variables in detail.

Pearson correlation coefficient is proposed to compute the correlation between a set of quantitative variables this coefficient corresponds to the classical linear correlation coefficient. This coefficient is well suited for continuous data. Its value ranges from -1 to 1, and it measure the degree of linear correlation between two variables. The squared Pearson correlation coefficient gives an idea of how much of the variability of a variable is explained by the other variable. The p-values that are computed for each coefficient allow testing the null hypothesis that the coefficients are not significantly different from 0.

Identifying Variables

Because one of the aims of the study is to find a significant statistical difference between physical and virtual variables in principal, two set of independent variables is defined. The variables for descriptive analysis will be adopted from information airport`s website structure. Each Information Block is considered as virtual variable.

There are three physical parameter were chosen as physical variables. First is “Passenger traffic”, second is “Ownership of airport” and third is “Internet penetration” for country. Those physical variables were selected randomly. But process of selection was based on literature analyses of important factors of airport`s environment and Internet.

Data collection.

Useful parent population of airport`s websites has to be chosen in order to correspond the purpose of this study. It means that most of external factors which can have a significant pressure on website usage have to be excluded. These factors are IT infrastructure development of society, Internet-educated population and level of economic development.

According to the International Telecommunications Union, more than one-fifth of the world's inhabitants use the Internet by the end of 2008. Although information and communications technology developed in all 154 nations surveyed between 2002 and 2007 it was still a largely rich country phenomenon.

Sweden led the index of overall IT development followed by South Korea, which gained two places, Denmark, the Netherlands, Iceland and Norway. The top 20 was dominated by Western Europe, North America and Asia. European growth since 2002 outstripped that of the United States, once the spearhead of Internet use.

It is not surprise because EU policy aimed on development informational technologies. Considerable efforts have been made for access availability to documents of these political and other public organizations. Therefore today all European institutions have websites that are accessible. Interactive technologies are considered now as a new way of providing public services to citizens and that, in general, have improved the basic conditions for the formation of electronic relationship.

The table below illustrates Internet development in Europe with respect to rest of the world.

Table1. Internet usage in Europe.

EUROPE	Population (2008 Est.)	% Pop. of World	Internet Users, Latest Data	Penetration (% Population)	User Growth (2000-2008)	Users % Table
Europe	803,903,540	12.0 %	393,373,398	48.9 %	274.3 %	24.6 %
Rest of World	5,906,125,530	88.0 %	1,202,896,710	20.4 %	370.1 %	75.4 %
TOTAL WORLD	6,710,029,070	100.0 %	1,596,270,108	23.8 %	342.2 %	100.0 %

NOTES: (1) European Internet Statistics were updated for March 31, 2009. (2) Population is based on data from the Census Bureau. (3) The usage numbers come from various qualified sources, mainly from data published by Nielsen Online , ITU, GfK , and other trustworthy sources. (4) Data may be cited, giving due credit and establishing an active link back to Internet World Stats . Copyright © 2009, Miniwatts Marketing Group. All rights reserved worldwide.

Source: http://www.internetworldstats.com/stats4.htm. (accessed 14th April 2009)

Therefore Europe is most suitable region for this study because the influence of external factors is minimized.

Next step is to define data set. Database of different organization are considered. Over 90% of commercial air traffic in Europe is provided by members of Airports Council International (ACI) Europe. ACI Europe, based in Brussels, Belgium, represents the

interests of some 407 airports in 45 countries. Therefore sampling framework consists from airport websites which were chosen from data base of Airports Council International (ACI) Europe. 314 website were investigated which is about 75% of parental population. 25% are airports which have not website or required information about airport is not accessible.

It should be noted that data for variables"Web Check-in" and "Booking Online" were collected in special way. "Booking online" or"Web Check-in" are usually available from airlines websites which offers them. But sometimes a link to airlines or en information of these services cannot be found on airport`s website. This situation is considered as given informational block is not existed on a given website.

For physical variable data were collected in different ways. Some data were received from A-Z Group Ltd (2009), from airport`s websites and Internet World Stats (2009)

Information structure analysis Airport `s website.

Model of website information structure.

As it was mentioned above, the model has to be built of Informational Blocks which should be found according to key features and characterizes of different activities on airport environment. Four conceptual categories were highlighted according to literature review. Hence, every new type of information is considered through aeronautical and non-aeronautical concepts and e-commerce concepts B2B and B2C. When new informational block is analyzed according to characteristics and key features of airport environment its place is defined in websites structure. If information cannot be classified under highlighted categories then new category will be created.
Following Information Blocks were found and classified.

Aeronautical B2B.

Business for Airlines.

Some websites have information blocks which are totally dedicated to relationship with airlines. Usually information of this block is based on airports and airlines complex relationship and their prominent and important partnership. Their mutual systemic interdependence and connections make their business relationship actual for all participant of business process. It may imply that airlines are involved in the development of the airport and air transportation, and airlines have to be informed about the airport business. Usually the aim of the information on website is described to improve airport business, strategic synergies with the airlines and symbiotic relationship.
Thus this information block can be classified as Aeronautical B2B.

Non-aeronautical B2B.

Cargo.

Cargo block information encompasses one of the largest areas of collaboration on airport environment. Usually airports serve aircargo generated only within an airport's market area. Other activities are typically outsourced to cargo agents. It can be company which serve cargo in one particular airport, or 3PL-4PL companies.
Time sensitivity is main factor why air cargo is used. Hence, one of the main challenge for airports as well as cargo agents is effective information sharing. The complexity of the job has encouraged the growth of firms that specialized on tasks to carry out cargo on behalf of shippers and provide an interface between shippers and airlines. Sometimes cargo Information Block helps to share information between participants of informational interchanging process.

Other function of cargo website information can be an arrangement of cargo structure in airport area. The logistics of moving air cargo is complicated. It involves preparing documentation, packaging, arranging insurance, collecting cargo from shippers, facilitating customs clearance at origin and destination, and completing final delivery. Cost effective information interchange between airport facilities is one of the main task of airport management.

Cargo Information on airport`s web site is often aimed and developed to solve the issues mentioned above. Hence, it can be classified as Non-aeronautical B2B

Advertising and marketing.

The airport environment is a unique area for advertisers. The combination of dwell time, profile of travelers, volume of passengers and innovative airport displays is unmatched by all media. Recently conducted airport website advertising has a great potency and establishes it as a true contender for all media.

Passengers flow consists largely of international business and leisure travelers. Advertising at airport allows communicating with affluent consumers and high-income groups through B2B advertising, global brand building, tactical and strategic initiatives as well as point of sale support. Therefore it is large competition among different companies for advertising place and marketing possibility at airport as well as on airport`s website. From other hand, income from advertising is one of most profitable among others non-aeronautical business.

Business at airport

This Information Block concerns information for any non-aeronautical B2B which acts on airport environment excluding Advertising and Cargo. It can content information about partnership agreement and structure, prices and so on. Owners of duty free, restaurants and banks use this Information Block which is classified as non-aeronautical B2B

Aeronautical B2C.

Booking on-line.

The option to book tickets online becomes very popular due to principal advantages of e-ticketing. It reduces booking expense by eliminating the need for printing and mailing paper documents. Another advantage is that it eliminates the possibility of critical documents getting lost in the mail or being sent to the wrong address. In addition e-tickets allow extra services like online/telephone/self-service, kiosk check-in, early check-in, printing boarding passes at airport kiosks and at locations other than an airport, automated refunds and exchanges online, by telephone and at kiosks On airport websites it is available through link to airline which serve booking or to special function, which can be considered as assistant to book tickets.

Operating airlines.

This block information implies that website have information about airlines operating on airport. It can be links to airlines with intent to provide service for passengers or simple list of airlines companies. In any case this Block provides information about airlines for customers.

Flight information.

Flight information is an Informational Block which displayed on the most airport`s websites. This block is interactive and contents information about arrivals, departures and common timetable which is constantly updated. It provides information about airlines for customers.

Security

Airport security is an activity which aims to protect airport and aircraft from terrorism and crime using certain techniques and methods. Airport security block on the website has only informational function until now. Recently security becomes to develop its interactive web function. The idea of transferring individual security systems into a common network infrastructure simplifies cabling systems and network management. Second, the use of standards of common network and technology, can substantially improve the effectiveness of solutions providing security at airports due to the digital transfer of voice, video and data. New possibilities changes function of security block on airport website. It will definitely be extended in future. In the Model it takes place in Aeronautical B2C section.

Web check-in

Web Check-in Service allows customers to check- in. Sometimes passengers can choose even a seat on the seat map displayed on the Web site. The technology was created to solve bottleneck issue which was caused by increasing traffic flows and airport area constrains. Web check-in is interactive service. In the model it is distributed in Aeronautical B2C sector.

Flight Schools and Club.

Flight Schools and Club usually based at airport and aim to training of clients to drive aircraft. They offer to get pilots licence for micro light aircraft and a full in-house aircraft sales and after-sale maintenance service. If Flight club acts on airport it usually they have a large informational block on airport website which is defined as Aeronautical B2C.

Heliport/Air Rescue team

Block content information about Heliports and Air Rescue team if they exist on given airport environment.

Non-aeronautical B2C.

Tour operators.

Tour operators are not only simply advertising their services at airport. They rented physical information space for developing of their business. Therefore Informational Block dedicated to B2C relationship takes almost central place on airport website.

Tour agencies and operators are important partners in process of passenger's service. A number of consumers which book their airline ticket and arrange their tours via travel agencies increased year after year. So closed interconnection between airport and agencies required a special arrangement and information on website with possibility to feedback so quickly as possible.

Information of tour operators on airport´s website is classified as Non-aeronautical B2C.

Hotels

Hotels become an integral, supportive part of the airport environment a long time ago. Often they oriented to serve transit passengers of all categories: businessmen, tourists, passengers with children and so on. Therefore the information towards hotels is usually integral part of airport`s website.

Bank and post office.

Currency exchange and post service exist almost in every large airport. Therefore information about them is often of website.

Duty free, bars and restaurant

Recently shops which situated on airport, started to do business via airport website. It means that passengers can order products and service on website some time before travelling.

Weather.

Weather information are delivered on airport website from airport meteorology center and become to be very traditional Information Block.

Internet

Most of airports offer wireless Internet WiFi. Anyone with a properly equipped laptop can now access the Internet wirelessly from their location of choice before and after flights. As a rule Informational Block on website dedicates to instruction for internet use.

Landside Transportation

Transportation informational block provide information about transport access. It is simply linked to website of different types of transport (public transport or taxi) which can be used for booking and scheduling information.

Car rentals

They obviously take a central place on web site as well as airport environment. Airport income which is provided by car rentals is increasing. They can be established by airport operators themselves or rent the airport facilities. Sometime they can cooperate together with airports operators to build, construct and manage car parking over certain period of time. They are business partners which provide important service to airport customers (B2C).

Parking

Usually a few car parking is situated near airport. They connected to airport terminals by covered walkways or special service bus. There two types of car parking: short-term and long-term. The information of car parking takes one of central places on airport website. It is often supported with airport environment maps gateways.

Special service.

This information block is highlighted to exhibit information which airport provides for passengers with animals or disable passengers

For example, in order to make travelling easier for passenger with a handicap many airports have special service and infrastructure. Aside from designated parking areas, the airport provides an elevator and toilets for handicapped guests and specific boarding and de-boarding assistance. All information about is usually on airport`s website in Special Information Block.

Internal information.

The sector contents information concern history, shareholders, investment, financial reports and airport employment. In other world, all information concern internal environment of airport.

Information about airport development and history.

It is very popular information block. Almost every airport describes its history mining that it is important part of presentation.

Environmental and Technical Information

Most of airports are part of the international aviation industry which, according to the United Nations' climate panel (IPCC) accounts for a total of approximately 2% of global CO2 emissions. Also Block contents information about noise and technical parameters of airport.

Investment

The information block provides investment reports and explains future investment plans. Reliable and constant investment is essential for airport authority because construction and development complex infrastructure are quite costly today. Therefore many airports, even public owned, give a broad opportunity for investment. Airport website is perfect place for providing of information which can be useable for investors.

Finance, shareholders

The information block provides finance reports and stock information. . It aims to keep authority and owners of airport informed about finance of enterprises constantly and about changing in shareholder`s list

Airport personnel.

Almost every airports website has informational block dedicated to employment.
Sites contain information about vacancies and job opportunities at the airport.

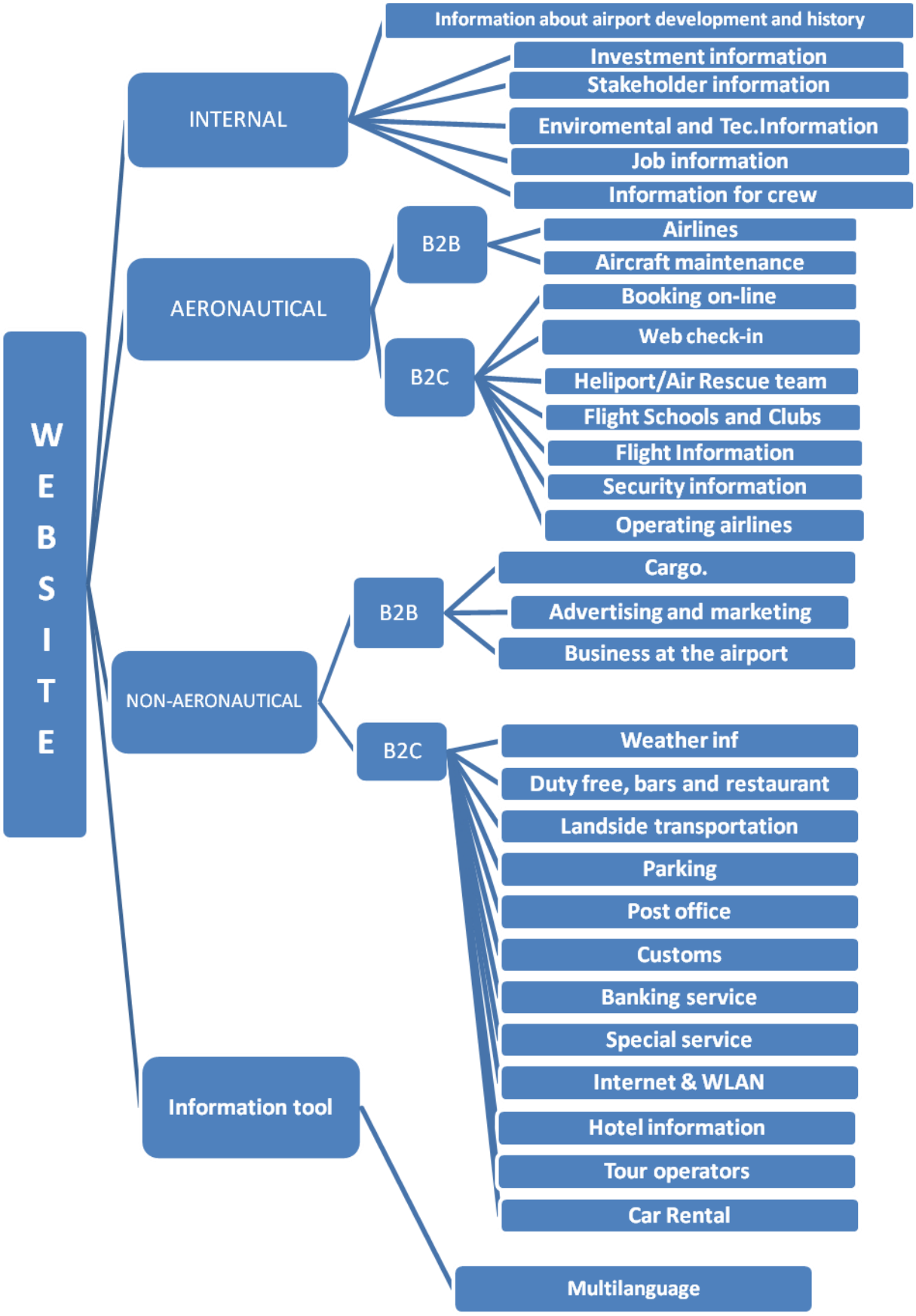
Information for pilot crew.

Sector has usually has interactive scheduling for pilot crew and individual employment information which can be accessible just for people who works at airport. It is very seldom information block.

Informational tools.

Informational tools are block which allows enhancing the access to information. Just one informational tool was found on observed websites. It is a Multilanguage Tool which helps to read and use airport website in several language.

Fig 1. Visual Model of Informational Structure of Airport Website.

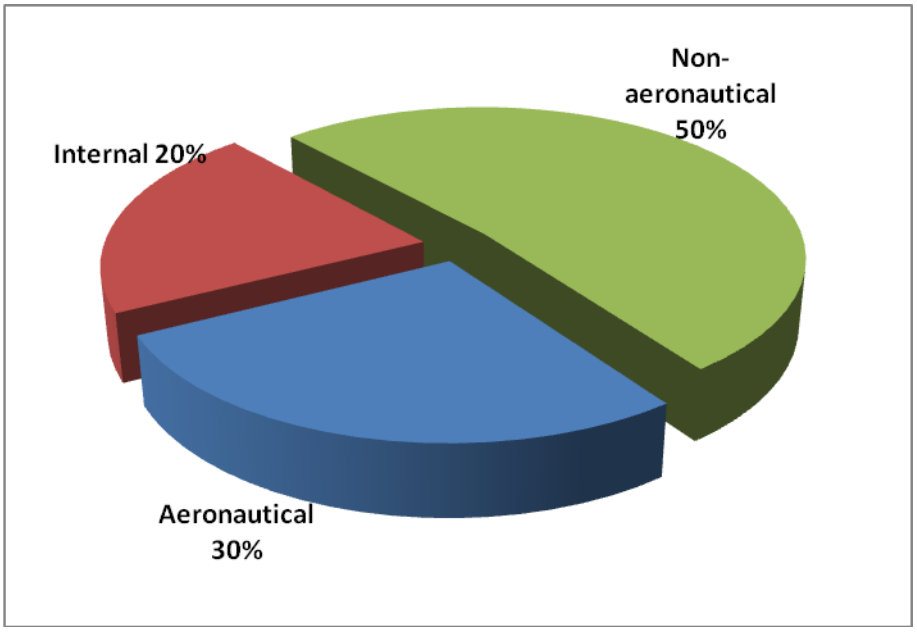


Analysis of information saturation of airport websites.

This part of study presents results of a analysis of European airport`s websites, which includes statistical analysis of the airport´s website information saturation in terms of assessing the information structure model, as well as evaluating of correlation between information saturation and physical factors.

50% of information blocks on airport`s website is dedicated to non-aeronautical activity. It exceed quota aeronautical information, which is 30%

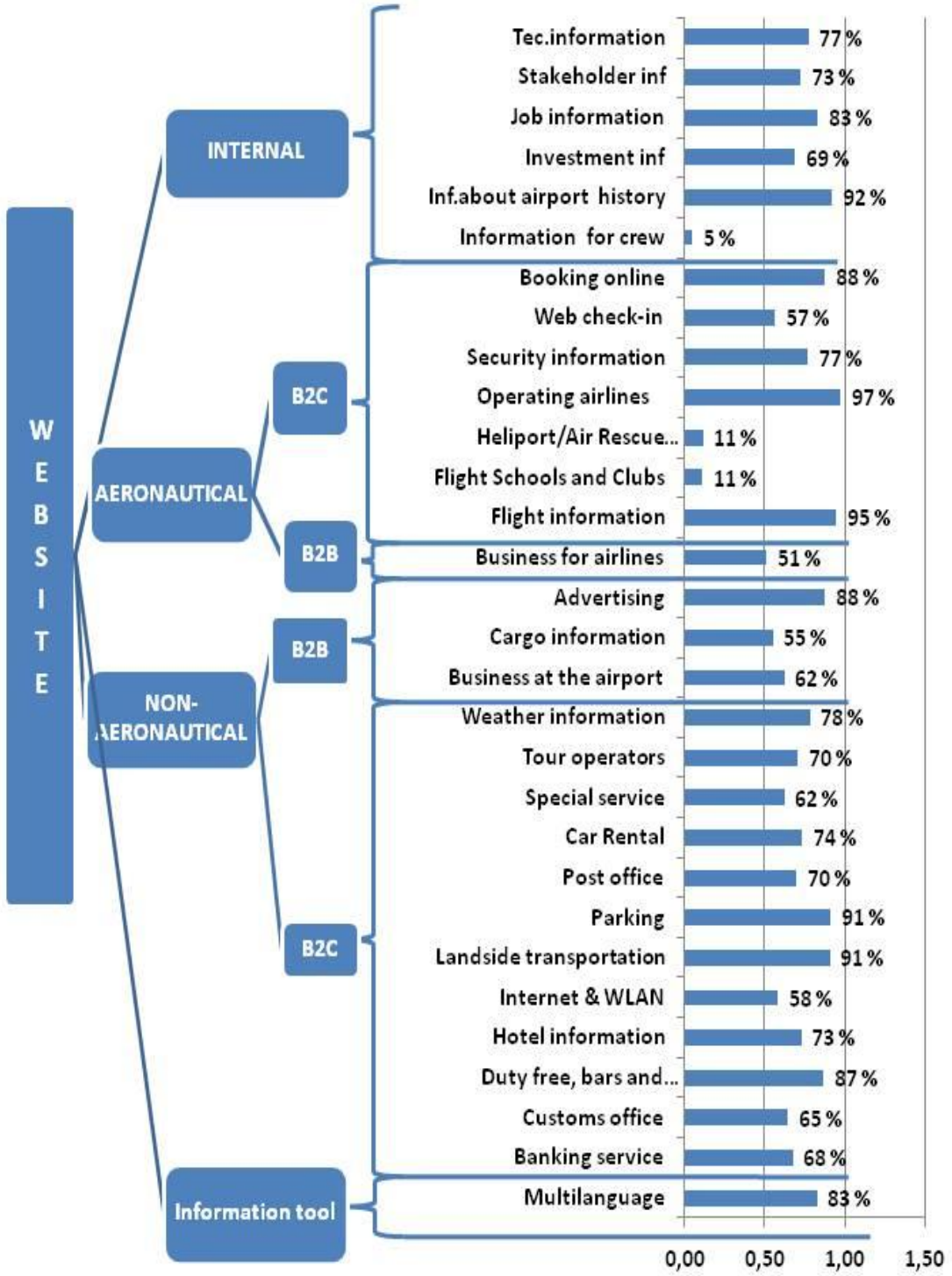
Fig 2. Information saturation according to activity types



According to ACI report (Airport charges in Europe. 2003) a typical airport derives half of its revenues from non-aeronautical activities, which is reflected in website structure. Quota of internal information is 20%. Most of internal information as it is shown on diagram below is oriented to stakeholders and investors.

The diagram below presents information saturation of websites according to Informational Blocks which were highlighted during process of model building.

Fig.3 Distribution of information saturation of websites according to Informational Blocks



The table illustrates a percentage of each Information Block presence on airport websites. The most frequent Information Blocks are “Operating airlines” and “Flight information”. Most seldom blocks are “Information for crew”.

There is a gap between percentages of types of activity. It is easy to suppose that high percentage of “Operating airlines”, which evident that B2C relationship at least exist, have

to be the same as “Business for airlines”, which describes B2B relationship. Indeed only 51% of observed websites have information for airlines (“Business for airlines”) meanwhile 97% of airport`s websites have information for customers about operating airlines. Thus airports don’t use full website possibility for B2B developing.

The same query arises when information saturation percentage of blocks “Web check-in” and “Booking online” are compared with “Operating airlines”. 57% and 88% of airport`s websites have “Web check-in” and “Booking online” block respectively which are less then amount of websites having “Operating airlines” Block. It is explained that some airports have no information about those two service functions. Sometimes their websites can have a link to airlines but no information. An “air-educated” passenger can surmise to use a link. Sometimes it is only a list of airlines names. An good example can be exposed on Zvartnots airport`s website, Armenia, URL: www.aia-zvartnots.aero/src/index.php?id=aircompny

Informational tools of airport websites are used only for one function “Multilanguage”. Website which has largest quantity of languages (10) is Flughafen München GmbH website. Most airport`s websites (83%) have Multilanguage function. Airport`s websites which not have it, are sites of United Kingdom’s airports. It is caused by international status of English.

Fig.3 shows that most of Informational Blocks is presented on more than 50% airport`s websites. Exactions of this fact are only three blocks: “Flight Schools and Clubs” 11%; “Heliport/Air Rescue team” 11%; “Information for crew” 5%. One can say it is a big gap between presence and absence of each Block.

Information saturation of websites per country.

Next step is to exam information saturation of websites per country. Countries which are represented in the sample by more than 10 airport`s websites, are selected for this exploration. In order to consider distribution of information of airport`s websites content per country a chart is created under table 2.

Table 2. Information saturation of selected 10 airport`s websites

Country	% of information saturation per country							
	United Kingdom	France	German	Italy	Norway	Romania	Spain	Sweden
Banking service	87	76	84	93	14	33	74	81
Customs office	85	48	84	93	14	33	74	81
Duty free, bars and restaurant	92	88	95	100	63	67	87	100
Hotel information	82	82	89	100	16	56	83	94
Internet & WLAN	62	48	89	93	16	33	52	75
Landside transportation	92	91	95	100	92	78	83	100
Parking	90	91	95	100	98	67	83	94
Post office	87	73	84	93	14	33	78	81
Car Rental	87	82	84	100	16	56	85	88
Special service	72	82	89	100	12	33	61	75
Tour operators	90	76	89	100	16	44	96	88
Weather information	18	70	95	100	98	67	100	38
Business at the airport	64	88	84	93	12	33	54	81
Cargo information	59	85	84	67	10	33	9	50
Advertising	82	76	84	100	98	67	96	63
Business for airlines	54	52	89	87	3	22	59	38
Flight information	87	85	89	100	98	78	98	100
Flight Schools and Clubs	8	24	0	0	4	11	2	0
Heliport/Air Rescue team	21	12	0	20	6	22	2	19
Operating airlines	100	94	84	100	100	100	100	100
Security information	95	88	89	100	16	44	83	100
Web check-in	59	55	68	87	96	22	35	25
Booking online	100	88	89	100	92	44	83	100
Information for crew	0	12	0	0	4	0	0	0
Inf.about airport history	85	88	89	93	100	44	100	100
Investment inf	59	52	79	87	94	33	100	100
Job information	87	85	47	87	94	56	96	100
Stakeholder inf	59	58	74	73	94	11	100	100
Enviroment and Tec.information	64	67	79	93	94	11	100	100

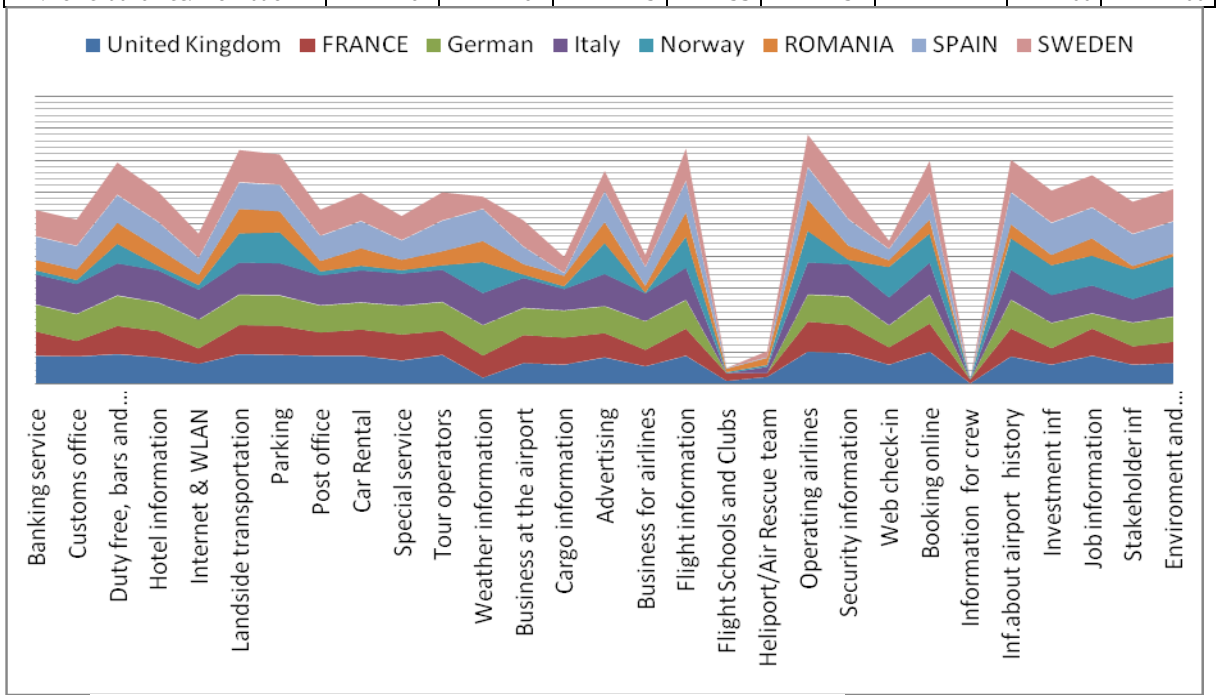


Fig 4. Information saturation of selected 10 airport`s websites

The chart above reflects information saturation of airport`s website for separate country. As it shows that distribution of presence of an information block on websites have a common trend. However there is a big gap between percentages of presence of

Informational Block for each country. For example, only 16% of Norwegian websites have information about Car Rental meanwhile all Italian websites (100%) have it.
It is explained by approach of organizing airport websites system in certain country. Norwegian airport`s websites informational system is organized by company which operates most of airports in Norway, AVINOR. It means that almost all airport`s web site placed on one domain (www.avinor.no) and have similar website`s structure. The same situation can occur not only for country but for operating company. For example, all websites of airports operating by BAA have no information about weather.

Physical factors impact on airport`s website information saturation.

The purpose of this part is to find how physical factors affect information saturation of website. It is seems obviously that information on website reflects physic structure of airport. Three physical factors were selected: Type of airport ownership, Passenger traffic per year and Population Internet penetration rate.

Airport`s website information saturation and Internet penetration (country).

In order to estimate the approximate mean of information saturation of websites for each country, the percentage of information saturation for each Information Block is summarized and divided into a number of information blocks received according to model. Data of Internet penetration per country is obtained from "Internet World Stats" report (Internet World Stats, 2009).
The following table consisting of data need for study is obtained.

Table.3 Average of information saturation of airport`s websites and % of Internet penetration.

	Country	% of information saturation of airport website	% of Penetration/ Population
	Albania	41,38	20,6
	Armenia	51,72	6,4
	Austria	78,62	72,3
	Belarus	41,38	32,2
	Belgium	75	70
	Bosnia And Herzegovina	37,93	31,2
	Bulgaria	62,07	36.7
	Croatia	63,22	50.0

	Cyprus	82,76	31
	Czech Republic	75	59.0
	Denmark	86,21	84.2
	Estonia	79,31	68.3
	Finland	74,71	83.5
	France	69,38	69.3
	Georgia	44,83	22
	German	80,27	65.9
	Greece	75,07	45.9
	Hungary	89,66	59.3
	Iceland	68,97	93.2
	Ireland	77,01	67.3
	Italy	90,89	51.7
	Latvia	93,1	61.4
	Lithuania	77,01	59.2
	Luxembourg	55,17	78.7
	Macedonia	86,21	43.9
	Malta	89,66	49.4
	Moldavia	62,07	19,7
	Montenegro	68,97	43.7
	Netherlands	94,83	85.6
	Norway	50,98	90.9
	Poland	77,24	52.0
	Portugal	71,03	41.8
	Romania	42,53	33.4
	Russia	67,24	32.3
	Serbia	63,79	44.7
	Slovakia	79,31	65.3
	Slovenia	48,28	64.8
	Spain	71,36	71.8
	Sweden	79,77	99.7
	Switzerland	88,97	75.5
	Turkey	86,21	34.5
	Ukraine	68,97	22,7
	United Kindom	71,69	76.4

Here are two hypotheses:
H_0: There is no correlation between amount of Internet users and information saturation of airport`s website.
H_a: There is a correlation between amount of Internet users and information saturation of airport`s website.

Data is on a continuous scale and the values of both members of the pairs are normally distributed.

Table.4 Pearson Correlation

Correlation matrix (Pearson):		
Variables	% information saturation of airport websites	% of Internet penetration
% information saturation of airport websites	**1**	**0,418**
Internet penetration	**0,418**	**1**
Values in bold are different from 0 with a significance level alpha=0,05		
p-values:		
Variables	% information saturation of airport websites	% of Internet penetration
% information saturation of airport websites	**0**	**0,005**
Internet penetration	**0,005**	**0**
Values in bold are different from 0 with a significance level alpha=0,05		
Coefficients of determination (R^2):		
Variables	% information saturation of airport websites	% of Internet penetration
% information saturation of airport websites	**1**	**0,175**
Internet penetration	**0,175**	**1**

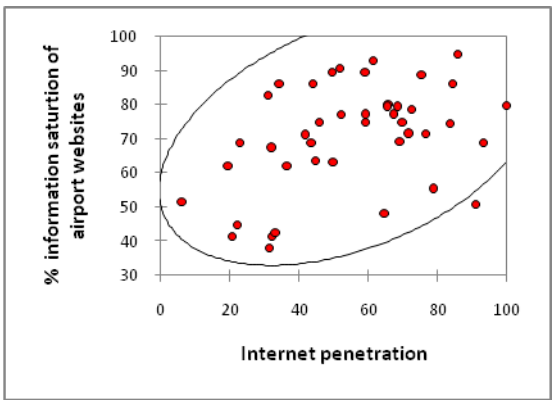


Fig. 4 Scatter plots: Pearson

There is the evidence from a scatter diagram that some positive linear relationship exists between two variables. The corresponding p-values (the estimated risk) allow considering it as significant. However the value of the correlation coefficient (0,418) proves that this relationship is very weak. The value of coefficients of determination is 0.175, which indicates that only 17 % in each variable can be explained by the other variable.

Thus, H_0 state is accepted which means that information structure and information saturation of airport website is independent from level of internet usage in country.

Airport`s website information saturation and airport`s ownership (pattern)

There are two hypotheses:

H_0: There is no significant statistical relationship between what information which airport`s website content and airport`s ownership

H_a: There is a significant statistical relationship between what information which airport`s website content and airport`s ownership

The values, power and chi-square statistic for virtual variables and physical variable Airport Ownership are given in Appendix 2. There are a statistically significant difference between following Informational Blocks and Airport`s Ownership: "Cargo information", "Investment information"; "Stakeholder information".

Below tables of those variables are presented. The variables have categories as follows:

Table 5. Interpretation for categories of variable Airport Ownership

For variable Airport Ownership	a category	private	1
	a category	public	2
	a category	mixed (public/private/concession)	3

Table 6. Interpretation for categories of any virtual variable

For all virtual variables	a category	Information block is NOT present on airport`s website	1
	a category	Information block is present on airport`s website	2

Table 7. V1Investment * F1Ownership Crosstabulation

			F1Ownership			
			1.00	2.00	3.00	Total
V1Investment	1.00	Count	30	34	34	98
		Expected Count	16.2	56.2	25.6	98.0
		% within V1Investment	30.6%	34.7%	34.7%	100.0%
		Residual	13.8	-22.2	8.4	
		Std. Residual	3.4	-3.0	1.7	
	2.00	Count	22	146	48	216
		Expected Count	35.8	123.8	56.4	216.0

	% within V1Investment	10.2%	67.6%	22.2%	100.0%
	Residual	-13.8	22.2	-8.4	
	Std. Residual	-2.3	2.0	-1.1	
Total	Count	52	180	82	314
	Expected Count	52.0	180.0	82.0	314.0
	% within V1Investment	16.6%	57.3%	26.1%	100.0%

It is not surprise that ownership patterns have impact on Investment information presence. The table shows negative difference between expected count and real count for airports with private and mixed ownership and positive differences within public ownership. But it is surprise that most of airports with public ownership (146 from 180) provide information about their plans and project for investors on their websites. This situation probably can be explained by common trend for all airports which have been started last decade and named commercialization of airport environment.

Table. 8 V1Stakeholder * F1Ownership Crosstabulation

			F1Ownership			
			1.00	2.00	3.00	Total
V1Stakeholder	1.00	Count	26	28	32	86
		Expected Count	14.2	49.3	22.5	86.0
		% within V1Stakeholder	30.2%	32.6%	37.2%	100.0%
		Residual	11.8	-21.3	9.5	
		Std. Residual	3.1	-3.0	2.0	
	2.00	Count	26	152	50	228
		Expected Count	37.8	130.7	59.5	228.0
		% within V1Stakeholder	11.4%	66.7%	21.9%	100.0%
		Residual	-11.8	21.3	-9.5	
		Std. Residual	-1.9	1.9	-1.2	
Total		Count	52	180	82	314
		Expected Count	52.0	180.0	82.0	314.0
		% within V1Stakeholder	16.6%	57.3%	26.1%	100.0%

Distribution of information saturation for stakeholders is almost same that for investors. And it also can be explained by process of turning airports into the joint-stock companies due to commercialization. Stakeholders of such companies are public authorities of different level. Perhaps it is more natural for them to keep their stakeholders informed by using public media then private company.

Table 9. V1CargoInf * F1Ownership Crosstabulation

			F1Ownership			
			1.00	2.00	3.00	Total
V1CargoInf	1.00	Count	15	111	15	141
		Expected Count	23.4	80.8	36.8	141.0
		% within V1CargoInf	10.6%	78.7%	10.6%	100.0%
		Residual	-8.4	30.2	-21.8	
		Std. Residual	-1.7	3.4	-3.6	
	2.00	Count	37	69	67	173
		Expected Count	28.6	99.2	45.2	173.0
		% within V1CargoInf	21.4%	39.9%	38.7%	100.0%
		Residual	8.4	-30.2	21.8	
		Std. Residual	1.6	-3.0	3.2	
Total		Count	52	180	82	314
		Expected Count	52.0	180.0	82.0	314.0
		% within V1CargoInf	16.6%	57.3%	26.1%	100.0%

The observations distribution on table above demonstrates that airports with private and mixed ownership provide more information for Cargo partners on their websites then airport with public ownership.

Airport`s website information saturation and passenger traffic (year).

Most of commercial airports depend on regularly-scheduled commercial airline traffic. First categorisation which is provided by FAA was used for this study. Airports are classified into primary airports, which handle more than 10,000 passengers each year, and nonprimary airports, which handle under 10,000 passengers annually.

Primary airports are further classified into:

Nonhub primary – airports handling over 10,000 but less than 0.05% of the country's annual passenger boarding. Population of Europe is 803903540 (Table 1). It is mean that airport with traffic from 10000 to 400000 passengers are share out in the category,

Small hub primary – airports with 0.05 to 0.25% of the country's annual passenger boarding, or from 400000 to 2000000, ((Code for SPSS “3”).

Medium hub primary – airports handling 0.25 to 1% of the country's annual passenger boardings, 2000000 to 8000000

Large hub primary – airports handling over 1% of the country's annual passenger boardings, 8000000

During statistical analysis it became obviously that FAA classification is not enough and new classification was introduce as it is illustrated on Table 10.

Table.10 Interpretation for categories of variable Airport`s Passengers Traffic

Airport Traffik	**Code**
under 10000	1
10000-50000	2
50 000 - 500 000	3
500 000 - 1 000 000	4
1 000 000 - 3 000 000	5
3 000 000 -6 000 000	6
6 000 000 - 10 000 000	7
10 000 000 -40 000 000	8
over 40 000 000	9

The categorical distribution for virtual variables is same as in previous part.

There are two hypotheses:

H_0: There is no significant statistical relationship between what information which airport`s website content and Airport`s Passengers Traffic

H_a: There is a significant statistical relationship between what information which airport`s website content and Airport`s Passengers Traffic

The values, power and chi-square statistic for virtual variables and physical variable Airport Ownership are given in Appendix 3. Variables which have a statistically significant result is present in the tables below illustrating informational saturation distributed by Airport`s Passenger Traffic per year.

Tables present result only if given information block exists on website. “Count” as well as “Expected count” concerns a number of airport`s websites which have given information block. “% within Business For Airlines” explains what share of given informational block

from total number of websites which have it; "% Within Airport Traffic" means a share of all websites which belong to airports with given traffic.

Table.11 **Business For Airlines * Airport Passenger Traffic Cross tabulation**

	FAirportTraffic									Total
	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	
Count	0	1	1	23	50	31	18	30	6	160
Expected count	0	2,5	1,7	24,3	47,5	32,3	17,7	28	6	160
% within V1BusinessForAirlines	,0%	,6%	,6%	14,4%	31,3%	19,4%	11,3%	18,8%	3,8%	100,0%
% within FAirportTraffic	,0%	2,6%	1,3%	74,2%	87,7%	88,6%	94,7%	96,8%	100,0%	51,0%
% of Total	,0%	,3%	,3%	7,3%	15,9%	9,9%	5,7%	9,6%	1,9%	51,0%

As it was mentioned above the statistically significant difference have been found for "Business For Airlines" and "Airport Passenger Traffic". Table above demonstrates abrupt transition from low percentage within "Airport Traffic" to much higher. It means that airports which have traffic per year more then 500 000 passengers per year, take care about information for airlines operating at the airport and consider their websites as important communication place for their partners.

Table.12 **Web Check-In * Airport passenger Traffic Cross tabulation**

	Airport passenger Traffic									Total
	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	
Count	8	20	31	12	35	25	14	27	6	178
Expected count	3,4	24,5	26	14,4	38,5	26,1	13,7	25,4	6	178
% within V1WebCheckIn	4,5%	11,2%	17,4%	6,7%	19,7%	14,0%	7,9%	15,2%	3,4%	100,0%
% within FAirportTraffic	47,1%	51,3%	39,2%	38,7%	61,4%	71,4%	73,7%	87,1%	100,0%	56,7%
% of Total	2,5%	6,4%	9,9%	3,8%	11,1%	8,0%	4,5%	8,6%	1,9%	56,7%

Even the statistically significant result has been found for "Web check-in" and "Airport Passenger Traffic" a transition from low to high percentage is not so abrupt. Differences between expected and real count are also not distinct much. It demonstrates that all airports more or less equal take care about Web Check-in presence on their website.

Table.13 **Security * AirportTraffic Crosstabulation**

	FAirportTraffic	Total

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	
Count	3	13	52	27	55	35	19	31	6	241
Expected count	1,5	11,6	40,9	28,9	56,8	37,6	22,9	34,8	6	241
% within V1Security	1,2%	5,4%	21,6%	11,2%	22,8%	14,5%	7,9%	12,9%	2,5%	100,0%
% within FAirportTraffic	17,6%	33,3%	65,8%	87,1%	96,5%	100,0%	100,0%	100,0%	100,0%	76,8%
% of Total	1,0%	4,1%	16,6%	8,6%	17,5%	11,1%	6,1%	9,9%	1,9%	76,8%

Table above shows that significant attention of airport is intended to security. And Security information takes an important place especially for airport with traffic from 50000 passengers and higher.

Table.14 **PostOffice * AirportTraffic Crosstabulation**

		FAirportTraffic									
		1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	Total
	Count	2	8	42	26	51	34	19	31	6	219
	Expected count	0	9,4	41,6	27,1	48,6	33,1	20,7	32,5	6	219
	% within V1PostOffice	,9%	3,7%	19,2%	11,9%	23,3%	15,5%	8,7%	14,2%	2,7%	100,0%
	% within FAirportTraffic	11,8%	20,5%	53,2%	83,9%	89,5%	97,1%	100,0%	100,0%	100,0%	69,7%
	% of Total	,6%	2,5%	13,4%	8,3%	16,2%	10,8%	6,1%	9,9%	1,9%	69,7%
Total	Count	17	39	79	31	57	35	19	31	6	314

Table.15 **Customs Office * Airport Traffic Cross tabulation**

		FAirportTraffic									
		1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	Total
	Count	1	8	34	21	51	33	19	30	6	203
	Expected count	1,2	5,4,	32,1	19,8	49,6	34,1	25,8	34,4	6	203
	% within V1CustomsOffice	,5%	3,9%	16,7%	10,3%	25,1%	16,3%	9,4%	14,8%	3,0%	100,0%
	% within FAirportTraffic	5,9%	20,5%	43,0%	67,7%	89,5%	94,3%	100,0%	96,8%	100,0%	64,6%
	% of Total	,3%	2,5%	10,8%	6,7%	16,2%	10,5%	6,1%	9,6%	1,9%	64,6%
Total	Count	17	39	79	31	57	35	19	31	6	314

Two tables above show almost same trend for Post office and Customs office. Almost all airports dedicate information to them on their website. Exception is airports with traffic less than 10000 passengers per year. Even small airports attempt to underling those services on their websites.

Table.16 **V1Banking * FAirportTraffic Crosstabulation**

		FAirportTraffic									
		1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	Total
	Count	0	9	39	25	50	35	19	29	6	212
	Expected count	0	5,8	28,9	19,8	53,6	34,8	25,3	37,8	6	212
	% within V1Banking	,0%	4,2%	18,4%	11,8%	23,6%	16,5%	9,0%	13,7%	2,8%	100,0%
	% within FAirportTraffic	,0%	23,1%	49,4%	80,6%	87,7%	100,0%	100,0%	93,5%	100,0%	67,5%
	% of Total	,0%	2,9%	12,4%	8,0%	15,9%	11,1%	6,1%	9,2%	1,9%	67,5%
Total	Count	17	39	79	31	57	35	19	31	6	314

As it shows on the table above the situation for Banking Service presence is different from previous. Airports with passenger traffic under 10000 don't mention this service on their website at all meanwhile almost all airport with traffic higher than 500000 have it on their websites.

Table.17 **SpecialService * AirportTraffic Crosstabulation**

		FAirportTraffic									
		1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	Total
	Count	0	5	30	27	50	34	16	27	6	195
	Expected count	0	5,8	29,6	23,7	49,6	35,1	17,1	28,1	6	195
	% within V1SpecialService	,0%	2,6%	15,4%	13,8%	25,6%	17,4%	8,2%	13,8%	3,1%	100,0%
	% within FAirportTraffic	,0%	12,8%	38,0%	87,1%	87,7%	97,1%	84,2%	87,1%	100,0%	62,1%
	% of Total	,0%	1,6%	9,6%	8,6%	15,9%	10,8%	5,1%	8,6%	1,9%	62,1%
Total	Count	17	39	79	31	57	35	19	31	6	314

Information about Special Service is present almost on all websites which belong to airport with higher traffic. Full concentration (100%) on giving information for people with special needs have airport with huge passenger traffic more than 40 ml. per year.

Table.18 **Internet * AirportTraffic Crosstabulation**

		FAirportTraffic									
		1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	Total
	Count	1	8	24	21	44	32	17	29	6	182
	Expected count	0	4,2	16,1	20,3	48,9	33,1	18,9	34,5	6	182
	% within V1Internet	,5%	4,4%	13,2%	11,5%	24,2%	17,6%	9,3%	15,9%	3,3%	100,0%
	% within FAirportTraffic	5,9%	20,5%	30,4%	67,7%	77,2%	91,4%	89,5%	93,5%	100,0%	58,0%

% of Total		,3%	2,5%	7,6%	6,7%	14,0%	10,2%	5,4%	9,2%	1,9%	58,0%
Total	Count	17	39	79	31	57	35	19	31	6	314

Despite of expectation not all airports even with high passenger traffic give information about Internet Service on their websites. Only websites of airports with huge passengers traffic more than 40 ml. per year have usually complete information.

Table.19 **V1Hotel * FAirportTraffic Crosstabulation**

		FAirportTraffic									
		1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	Total
	Count	3	12	47	26	51	35	19	30	6	229
	Expected count	6	15,6	48,7	22,6	44,9	36,4	18,9	29,9	6	229
	% within V1Hotel	1,3%	5,2%	20,5%	11,4%	22,3%	15,3%	8,3%	13,1%	2,6%	100,0%
	% within FAirportTraffic	17,6%	30,8%	59,5%	83,9%	89,5%	100,0%	100,0%	96,8%	100,0%	72,9%
	% of Total	1,0%	3,8%	15,0%	8,3%	16,2%	11,1%	6,1%	9,6%	1,9%	72,9%
Total	Count	17	39	79	31	57	35	19	31	6	314

Table above demonstrate that only 17% of airports with low passengers traffic place information about hotels on their website. On contrary, 100% of airport with traffic over 500000 have it on their website.

Table.20 **TourOperators * AirportTraffic Crosstabulation**

		FAirportTraffic									
		1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	Total
	Count	4	15	43	22	51	35	17	28	6	221
	Expected count	3,6	13,6	39,4	23,7	52,7	35,2	18,9	27,9	6	221
	% within V1TourOperators	1,8%	6,8%	19,5%	10,0%	23,1%	15,8%	7,7%	12,7%	2,7%	100,0%
	% within FAirportTraffic	23,5%	38,5%	54,4%	71,0%	89,5%	100,0%	89,5%	90,3%	100,0%	70,4%
	% of Total	1,3%	4,8%	13,7%	7,0%	16,2%	11,1%	5,4%	8,9%	1,9%	70,4%
Total	Count	17	39	79	31	57	35	19	31	6	314

Presence of Tour Operators on airport`s website obviously depend on level of passenger traffic. Only 23% of airport with low traffic provide information about Tour Operators and 100% of airport with highest level of traffic

Table.21 **BusinessAtairport * AirportTraffic Crosstabulation**

		FAirportTraffic									
		1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	Total
	Count	2	13	38	21	43	31	14	27	6	195
	Expected count	0	2,3	23,5	24,9	54,5	36,2	17,9	29,7	6	195
	% within V1BusinessAtairport	1,0%	6,7%	19,5%	10,8%	22,1%	15,9%	7,2%	13,8%	3,1%	100,0%
	% within FAirportTraffic	11,8%	33,3%	48,1%	67,7%	75,4%	88,6%	73,7%	87,1%	100,0%	62,1%
	% of Total	,6%	4,1%	12,1%	6,7%	13,7%	9,9%	4,5%	8,6%	1,9%	62,1%
Total	Count	17	39	79	31	57	35	19	31	6	314

Table above shows that significant attention of airport is intended to information of their non-aeronautical business partners. More high traffic means more possibility to get information B2B from airport website.

Findings.

- Model of airport`s website information structure was built.
- Model contains information blocks which classified according to types of activities on airport environment and e-commerce business relationship classification.
- Most of information blocks are presented on more than 50% websites.
- Information possibilities are not used completely. Pairs “Operating airlines”- “Business for airlines”, “Operating airlines”- “Web check-in”, “Operating airlines”- “Booking online” should show same percentage of information saturation. However, their percentage is very different.
- . Informational tools of airport websites are used only for one function “Multilanguage”
- Utilizing airport portal as common website can have advantage and disadvantage. Advantage is more equal information saturation (all information blocks are presented on website). Disadvantage appears when certain information block is lack. If it is so then this block is absent on all websites.
- Level of Internet usage in society almost not affects information presented on an airport`s website.
- Physical factors affects certain set of information presented on airport`s website. In this study impact of two chosen physical factors was investigated. Ownership pattern influences to information, concerning mostly investment and finance, and Airport Passenger Traffic affects generally non-aeronautical and aeronautical information blocks.

- Information blocks “Flight information” and “History and airport development” are not influenced.

Challenges of Internet-based service application.

Information structure of airport`s websites.

Process of analyzing airport websites allowed highlighting and describing information structure of airport website. Despite the existing opinion that the information saturation of website is arbitrary and depends only on the desire of the client and the designer, found model has certain structure and certain key features. It fits any airport website and allows find informational lack on website and to disclose missed information. The discussion below attempts to identify trend and challenges of airport`s website based on previous analysis.

Standardization of airport`s websites.

Standardization`s trend of airport`s websites development implies that airport`s websites strive to construct a website according standard structure and to fill it with standard information types. From one hand standardization is modern challenge caused by globalization process and development of different intermodal transportation digital systems. Requirement for web-based information system that uses Internet web technologies to deliver information and services is greater than before. From other hand, standardization is an objective process among the airports websites. Standardization will be the ultimate result of evolutionary information saturation the airports websites and also finding of informational lack on the website.

For example, as it is shown above several Information blocks (Operating Airlines, Booking Online, and Web Check.-in) are actually one service. Now they are presented on airport websites as separate functions but they may be combine in one service presented on airport`s website.

The model of airport`s website structure is also evidence of standardization. The fact, that airports which have a different environment, arrangement, size, management style, traffic and so on, have a same informational website structure. It confirms that they tend to uniform standard. A lot of professionals and experts discuss a creation of common airport

web informational system. In fact, it can happened itself without special targeted participant.

Airport Security evolution on website.

Today security technologies of new generation are orientated to use WWW which provides cost-effective implementation of intelligent decisions. Internet infrastructure allows airports to utilize complex advanced applications with respect to customers, suppliers and employees. Web-access, IP-telephony, warning network systems, videoconference and network management are tools which are exploited by companies around the world in an Intranet and Internet applications. Flexibility of this program allows airports to add internal functions in accordance with their needs.

An additional advantage is a sharing of security management system cost, providing airlines, trade organizations and other participants of airport business process. Another advantage of the described approach is a requirement to improve the protection of air passengers. Safety, management of the airports and communication require speed and efficiency, costs reducing, reducing of observed area, simplicity of installation and expansion. At the same time the challenge of simplicity and cost efficiency faced the network management system. These factors make Internet application an important issue of future security development on airport environment. They make airport website special place where common security network of airports can share and exchange information.

Airport`s website's platform for investment and finance openness.

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Globalization process of democracy and competitive challenge change the approaches of business relationships in last decades. Commercialization of airports leads to creating joint-stock companies with all ownership patterns. This process is illustrated by situation which are describes in previous part of the study. Among all airports which provide information about their plans and project for investors and stakeholders on their websites, most of companies are with public ownership.

Effective access to information, speed and usability play today an important role. For example, a key management decision can be taken due to operative web information. The Internet has become very important due to high quality programs, due to increasing communication activity and information exchange.

There are many airports declare their financial policy on airports website. A lot of investors and shareholders are built relationship with their business partners on the assumption of access to digital information. Real time regime of access to financial reports on web is one of challenges today.

Limitations

Model of airport`s website informational structure can be more detailed. Even it has no special impact on result several block can be divided into two parts for desalination. Information Block “Special Service” can be divided into “Service for disable people” and “Service for special needs” and Informational Block “Environment and technical information” probably should be divided into several block addressed to Noise, Clime and Technical data.
Information saturation average per country used for research correlation of Internet usage and Information saturation for a country is approximate measure.

Recommendation for further research.

1. There are currently no single methods and measures that provide to analyze of information saturation for website of within certain industry. It can be useful for improving both of website usability and quality of information.

2. In the last decade a lot of airport`s authority concentrate to improving service for people with constrain ability. It is obvious that such interesting part of website as Information Tool needs to be investigated more. Because now this tool is used only for language shifting, but modern Internet can significantly extend opportunities for people with special needs if airport` website will equipped with special tool as sound or light signal, simplifying interactive information structure of website.

Conclusion.

This study aims to explore website's structure of airports with respect to information saturation and several physical factors, make a standard visual model and understand trends and challenges of websites application.

Model of airport`s website structure was built. Then it was used for further investigation as standard model. Main findings are that more than 50% websites contain information which was classified during model building. Finding based on the model, light up weak places of airport web structure and gives a broad opportunity for improving information saturation and distribution on airport website.

The study indicates new informational tools of airport websites and its poor utilizing and made recommendation for this field.

The study discover advantage and disadvantage of utilizing portal for a number of airport`s websites and made recommendation in order to improve portal construction

Internet level of society almost not affects information presented on an airport`s website.

Internet based application faces a many challenges and trends. Standardization`s trend of airport`s websites development is characterized as significant. It means that airport`s websites not only strive to construct standard website structure but to fill it with standard information type. One of consequence of standardization trend is challenge to introduce common security system using website of airport as platform. .

Commercialization of airports requires new level of information interchange for internal application. Real time regime of access to financial and other reports on web is one of challenges today.

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List of tables and figures

Appendix 1 List of Airport's Websites

	COUNTRY	CITY	AIPORT	SITE
1	Albania	Tirana	Tirana International Airport	www.tirana-airport.com.al
2	Armenia	Yerevan	Zvart1ts - Armenia International Airports	www.aia-zvart1ts.aero/home.html
3	Austria	Graz	Flughafen Graz	www.flughafen-graz.at
4	Austria	Linz	Flughafen Linz Gmbh	www.flughafen-linz.at/www/cm/bda/de
5	Austria	Vienna	Vienna International Airport	www.viennaairport.com
6	Austria	Innsbruck	Tiroler Flughafenbetriebsges.M.B.H.	www.innsbruck-airport.com
7	Austria	Salzburg	Salzburger Flughafen Gmbh	www.salzburg-airport.com
8	Belarus	Minsk	Minsk National Airport	www.airport.by
9	Belgium	Antwerp-Deurne	Luchthaven Antwerpen	www.antwerp-airport.be
10	Belgium	Brussels	The Brussels Airport Company	www.brusselsairport.be/en
11	Belgium	Charleroi	Brussels South	www.brusselsairport.be/en
12	Belgium	Liège	Liège Airport Sa	www.brusselsairport.be/en
13	Bosnia And Herzegovina	Banja Luka	Banjaluka-Airport	www.banjaluka-airport.com
14	Bosnia And Herzegovina	Mostar	Mostar Airport	www.mostar-irport.ba
15	Bosnia And Herzegovina	Sarajevo	Aerodrom Sarajevo	www.sarajevo-airport.ba
16	Bulgaria	Plovdiv	Plovdiv Airport	www.plovdivairport.com
17	Bulgaria	Sofia	Sofia Airport	www.sofia-airport.bg
18	Bulgaria	Bourgas	Bourgas Airport	www.bourgas-airport.com
19	Bulgaria	Varna	Varna International Airport	www.varna-airport.bg
20	Croatia	Dubrovnik	Zracna Luka Dubrovnik	www.airport-dubrovnik.hr
21	Croatia	Osijek	Osijek Airport	www.osijek-airport.hr
22	Croatia	Pula	Aerodrom Pula	www.airport-pula.com.hr
23	Croatia	Split	Aerodrom Split	www.split-airport.hr
24	Croatia	Zadar	Zadar Airport Ltd.	www.zadar-airport.hr
25	Croatia	Zagreb	Aerodrom Zagreb	www.zagreb-airport.hr
26	Cyprus	Larnaka	Hermes Airports Ltd	www.cyprusairports.com.cy
27	Czech Republic	Br1	Airport Br1 Ltd	www.airport-br1.cz
28	Czech Republic	Karlovy Vary	Airport Karlovy Vary Ltd	www.airport-k-vary.cz
29	Czech Republic	Ostrava	Ostrava International Airport	www.airport-ostrava.cz
30	Czech Republic	Prague	Csl - Ceska Sprava Letist'	www.csl.cz
31	Denmark	Billund	Billund Airport	www.billund-airport.com
32	Denmark	Copenhagen	Copenhagen Airports Ltd (2 Airports)	www.cph.dk
33	Estonia	Tallin	Tallinn Airport	www.tallinn-airport.ee
34	Finland	Vaasa	Helsinki-Malmi	www.finavia.fi
35	Finland	Turku	Kauhava	www.finavia.fi/airport_turku
36	Finland	Helsinki	Helsinki-Vantaa	www.helsinki-vantaa.fi
37	France	Marseille Provence	CCI De Marseille Provence	www.marseille.aeroport.fr
38	France	Nice Cote D'azur	Nice - Cote D´Azur Airport	www.nice.aeroport.fr
39	France	Pau-Pyrenees	CCI De Pau	www.pau.aeroport.fr
40	France	Bastia	CCI De Bastia Et De La Haute-Corse	www.bastia.aeroport.fr

41	France	Caen	CCI De Caen	www.caen.aeroport.fr
42	France	Dôle	CCI Du Jura	www.aeroportfranchecomte.com
43	France	Limoges	CCI De Limoges	www.aeroportlimoges.com
44	France	Paris	Charles De Gaulle	www.aeroportsdeparis.fr
45	France	Paris	Orly	www.aeroportsdeparis.fr
46	France	Ajaccio	CCI d'Ajaccio Et De Corse Du Sud	www.ajaccio.aeroport.fr
47	France	Avig1n	CCI d'Avig1n Et Du Vaucluse	www.avig1n.aeroport.fr
48	France	Biarritz	Syndicat Mixte De l'Aérodrome Biarritz Anglet Bayonne	www.biarritz.aeroport.fr
49	France	Bordeaux	Aéroport De Bordeaux SA	www.bordeaux.cci.fr
50	France	Brest	CCI De Brest	www.brest.aeroport.fr
51	France	Lyon	Lyon-Bron	www.bron-airport.com
52	France	Cannes	Cannes-Mandelieu	www.cannes.aeroport.fr
53	France	Chambéry	Société d'Exploitation De l'Aéroport De Chambéry Aix	www.chambery-airport.com
54	France	Châteauroux	Syndicat Mixte De L'aéroport Châteauroux-Déols	www.chateauroux-airport.com
55	France	Dijon	CCI De Dijon-Bourgogne	www.dijon.aeroport.fr
56	France	Gre1ble	Seag	www.gre1ble-airport.com
57	France	La Rochelle –Ile De Ré	CCI Du Havre	www.havre.aeroport.fr
58	France	La Rochelle –Ile De Ré	CCI De La Rochelle	www.larochelle.aeroport.fr
59	France	Lille	CCI De Grande Lille	www.lille.aeroport.fr
60	France	Lyon	Lyon-Saint Exupery	www.lyon.aeroport.fr
61	France	Nantes-Atlantique	CCI De Nantes	www.nantes.aeroport.fr
62	France	Paris	Vatry S.E.V.E. (Societe d'Exploitation De Vatry Europort)	www.parisvatry.com
63	France	Perpignan-Rivesaltes	CCI De Perpignan & Pyrenees Orientales	www.perpignan.cci.fr
64	France	Quimper-Cornouaille	CCI De Quimper	www.quimper.aeroport.fr
65	France	Rennes	CCI De Rennes	www.rennes.aeroport.fr
66	France	Strasbourg	CCI De Strasbourg Et Du Bas-Rhin	www.strasbourg.aeroport.fr
67	France	Tarbes	Societe d'Exploitation De l'Aeroport De Tarbes Lourdes Pyrenees	www.tarbes-lourdes.aeroport.fr
68	France	Toulon-Hyeres	CCI Du Var	www.toulon-hyeres.aeroport.fr
69	France	Toulouse-Blagnac	Sa Toulouse-Blagnac	www.toulouse.aeroport.fr
70	Georgia	Tbilisi	Tav Airports Holding Co.	www.tbilisiairport.com
71	German	Nürnberg	Flughafen Nürnberg Gmbh	www.airport-nuernberg.de
72	German	Trollenhagen	Neubrandenburg	www.flughafen-neubrandenburg.de
73	German	Dortmund	Flughafen Dortmund Gmbh	dortmund-airport.de
74	German	Bremen	Flughafen Bremen Gmbh	www.airport-bremen.de
75	German	Berlin	Berlin Brandenburg Flughafen Holding Gmbh (2 Airports)	www.berlin-airport.de
76	German	Lahr	Black Forest Airport Lahr Gmbh	www.blackforest-airport.com
77	German	Dresden	Flughafen Dresden Gmbh	www.dresden-airport.de
78	German	Düsseldorf	Flughafen Düsseldorf Gmbh	www.duesseldorf-international.de

79	German	Hannover	Flughafen Hannover-Langenhagen Gmbh	www.flughafen.hannover.de
80	German	Magdeburg	Flughafen Magdeburg Gmbh	www.flughafen-magdeburg.de
81	German	Friedrichshafen	Flughafen Friedrichshafen Gmbh	www.fly-away.de
82	German	Münster	Flughafen Münster/Osnabrück Gmbh	www.fmo.de
83	German	Frankfurt	Fraport AG	www.fraport.com
84	German	Hahn	Flughafen Frankfurt-Hahn Gmbh	www.hahn-airport.de
85	German	Hamburg	Flughafen Hamburg Gmbh	www.ham.airport.de
86	German	Leipzig	Flughagen Leipzig/Halle Gmbh	www.leipzig-halle-airport.de
87	German	Munich	Flughafen München Gmbh	www.munich-airport.de
88	German	Rostock	Flughafen Rostock-Laage-Güstrow Gmbh	www.rostock-airport.de
89	German	Stuttgart	Flughafen Stuttgart Gmbh	www.stuttgart-airport.com
90	Greece	Athen	Athens International Airport S.A.	www.aia.gr
91	Greece	Alexandroupolis	Alexandroupolis International Airport	www.alxd.gr
92	Hungary	Budapest	Budapest Ferihegy International Airport Operating Plc.	www.bud.hu
93	Iceland	Keflavik	Keflavik Airport Ltd	www.keflavikairport.com
94	Ireland	Dublin	Dublin Airport Authority (3 Airports)Cork Shannon	www.aer-rianta.ie
95	Ireland	Galway	Galway Airport	www.galwayairport.com
96	Ireland	Knock	Connaught Airport Development Company Ltd	www.irelandwestairport.com
97	Italy	Catania	SAC Spa	www.aeroporto.catania.it
98	Italy	Verona	Verona Airports System (2 Airports)	www.aeroportoverona.it
99	Italy	Rome	Aerop. Di Roma, Aerop. Leonardo Da Vinci (2 Airports)	www.adr.it
100	Italy	Firenze	Aeroporto Di Firenze Spa	www.aeroporto.firenze.it
101	Italy	Trieste	Aerop. Friulli-Venezia Giula Spa	www.aeroporto.fvg.it
102	Italy	Turin	Aeroporto Torino, Sagat	www.aeroportoditorino.it
103	Italy	Trapani Birgi	Airgest Spa	www.airgest.it
104	Italy	Genova	Aeroporti Di Genova Spa	www.airport.genova.it
105	Italy	Bologna	Aeroporto G. Marconi Di Bologna Spa	www.bologna-airport.it
106	Italy	Naples	GESAC Aeroporto Di Capodichino	www.gesac.it
107	Italy	Palermo	GESAP Aeroporto Di Palermo-Puntaraisi	www.gesap.it
108	Italy	Milano	Linate/Malpensa SEA Milano (2 Airports)	www.sea-aeroportimilano.it
109	Italy	Bari	Aeroporti Di Puglia Spa (4 Airports) Brindisi Foggia Taranto	www.seap-puglia.it
110	Italy	Cagliari	Elmas SOGAER Spa	www.sogaer.it
111	Italy	Venezia	SAVE "Marco Polo" Di Venezia Tessera	www.veniceairport.it
112	Latvia	Riga	Riga International Airport J.S.C.	www.riga-airport.com
113	Lithuania	Kaunas	Kaunas Airport 4	www.kaunas-airport.lt
114	Lithuania	Palanga	Palanga Airport	www.palanga-airport.lt

115	Lithuania	Vilnius	Vilnius Airport	www.vilnius-airport.lt
116	Luxembourg	Luxembourg	Société De l'Aéroport De Luxembourg S.A.	www.airport.lu
117	Macedonia	Skopje	Joint Stock Company For Airport Services	www.aero.com.mk
118	Malta	Luqa	Malta International Airport Ltd	www.maltairport.com
119	Moldavia	Kishinev	Kishinev Airport	www.airport.md
120	Montenegro	Podgorica	Airports Of Montenegro (2 Airports) Tivat	www.montenegroairports.com
121	Netherlands	Eindhoven	Eindhoven Airport	www.eindhovenairport.nl
122	Netherlands	Maastricht	Maastricht Airport	www.maa.nl
123	Netherlands	Rotterdam	Rotterdam Airport	www.rotterdam-airport.nl
124	Netherlands	Amsterdam	Amsterdam Airport Schiphol	www.schiphol.nl
125	Norway	Stavanger	Stavanger, Sola	www.avinor.no/
126	Norway	Bergen	Bergen, Flesland	www.avinor.no/
127	Norway	Trondheim	Trondheim, Værnes	www.avinor.no/
128	Norway	Bodø	Bodø	www.avinor.no/
129	Norway	Tromsø	Tromsø	www.avinor.no/
130	Norway	Kristiansand	Kristiansand, Kjevik	www.avinor.no/
131	Norway	Haugesund	Haugesund, Karmøy	www.avinor.no/
132	Norway	Ålesund	Ålesund, Vigra	www.avinor.no/
133	Norway	Molde	Molde, Årø	www.avinor.no/
134	Norway	Kristiansund	Kristiansund, Kvernberget	www.avinor.no/
135	Norway	Harstad/Narvik	Harstad/Narvik, Evenes	www.avinor.no/
136	Norway	Bardufoss	Bardufoss	www.avinor.no/
137	Norway	Alta	Alta Airport	www.avinor.no/
138	Norway	Lakselv	Lakselv, Banak	www.avinor.no/
139	Norway	Kirkenes	Kirkenes, Høybuktmoen	www.avinor.no/
140	Norway	Svalbard	Svalbard, Longyear	www.avinor.no/
141	Norway	Fagernes	Fagernes, Leirin	www.avinor.no/
142	Norway	Sogndal	Sogndal, Haukåsen	www.avinor.no/
143	Norway	Florø	Florø	www.avinor.no/
144	Norway	Førde	Førde	www.avinor.no/
145	Norway	Sandane	Sandane, Anda	www.avinor.no/
146	Norway	Ørsta-Volda	Ørsta-Volda, Hovden	www.avinor.no/
147	Norway	Røros	Røros	www.avinor.no/
148	Norway	Namsos	Namsos	www.avinor.no/
149	Norway	Rørvik	Rørvik, Ryum	www.avinor.no/
150	Norway	Brønnøysund	Brønnøysund, Brønnøy	www.avinor.no/
151	Norway	Sandnessjøen	Sandnessjøen, Stokka	www.avinor.no/
152	Norway	Mo I Rana	Mo I Rana, Røssvoll	www.avinor.no/
153	Norway	Mosjøen	Mosjøen, Kjærstad	www.avinor.no/
154	Norway	Røst	Røst	www.avinor.no/
155	Norway	Værøy	Værøy	www.avinor.no/
156	Norway	Leknes	Leknes	www.avinor.no/
157	Norway	Svolvær	Svolvær, Helle	www.avinor.no/
158	Norway	Stokmarknes	Stokmarknes, Skagen	www.avinor.no/
159	Norway	Narvik	Narvik, Framnes	www.avinor.no/
160	Norway	Andøya	Andøya	www.avinor.no/
161	Norway	Sørkjosen	Sørkjosen	www.avinor.no/
162	Norway	Hasvik	Hasvik	www.avinor.no/
163	Norway	Hammerfest	Hammerfest	www.avinor.no/

164	Norway	Honningsvåg	Honningsvåg, Valan	www.avinor.no/
165	Norway	Mehamn	Mehamn	www.avinor.no/
166	Norway	Berlevåg	Berlevåg	www.avinor.no/
167	Norway	Båtsfjord	Båtsfjord	www.avinor.no/
168	Norway	Vadsø	Vadsø	www.avinor.no/
169	Norway	Vardø	Vardø, Svartnes	www.avinor.no/
170	Norway	Sandefjord, Torp	Sandefjord, Torp	www.avinor.no/
171	Norway	Ørlandet	Ørlandet	www.avinor.no/
172	Norway	Geilo	Geilo - Dagali Airport	www.geilolufthavn.no
173	Norway	Notodden	Notodden	www.notodden-flyplass.no
174	Norway	Oslo	Oslo, Gardermoen	www.osl.no
175	Norway	Stord	Stord - Sørstokken Airport	www.stordlufthavn.no/
176	Poland	Wroclaw	Port Lotniczy Wroclaw Sa - Wroclaw Airport Co	www.airport.wroclaw.pl
177	Poland	Poznan	Airport Poznan-Lawica	www.airport-poznan.com.pl
178	Poland	Warsaw	State Enterprise "Polish Airports"	www.chopin-airport.pl
179	Poland	Katowice	Upper Silesian Aviation Group	www.katowice-airport.com
180	Poland	Krakow –Balice	The John Paul Ii Int. Airport Krakow –Balice	www.krakowairport.pl
181	Portugal	Madeira	Funchal - Madeira Airport	www.anam.pt
182	Portugal	Porto Santo	Porto Santo Airport	www.anam.pt
183	Portugal	Faro "	Faro Airport	www.ana.pt
184	Portugal	Lisbon	Lisbon - Portela Airport	www.ana.pt
185	Portugal	Porto	Oporto - Francisco Sá Carneiro Airport	www.ana.pt
186	Romania	Vidrasau	Aeroport Targu Mures	www.targumuresairport.ro
187	Romania	Constanta	Constanta International Airport	mk-airport.ro
188	Romania	Arad	Aeroportul Arad	www.aeroportularad.com
189	Romania	Timisoara	Timisoara International Airport	www.aerotim.ro
190	Romania	Cluj Napoca	R.A. Aeroportul Cluj Napoca	www.airportcluj.ro
191	Romania	Baia Mare	Baia Mare Airport	www.baiamareairport.ro
192	Romania	Tulcea	Tulcea Airport R.A.	www.cjtulcea.ro
193	Romania	Oradea	Aeroportul Oradea Ra	www.oradea-online.ro
194	Romania	Bucharest	Henri Coanda Bucharest Airport	www.otp-airport.ro
195	Russia	Ekaterinburg	Koltsovo Airport	www.koltsovo.ru
196	Russia	Kurumoch	Kurumoch International Airport	airport.samara.ru
197	Russia	Moscow	Moscow Intl Airportdomodedovo–East Line Group	www.domodedovo.ru
198	Russia	St-Petersburg	Pulkovo International Airport	www.pulkovo.ru
199	Russia	Moscow	Moscow Sheremetyevo Airport	www.sheremetyevo-airport.ru
200	Russia	Moscow	Vnukovo Iairport	www.vnukovo.ru
201	Serbia	Nis	Airport Nis	www.airportnis.co.yu
202	Serbia	Belgrade	Belgrade Nikola Tesla Airport	www.beg.aero
203	Slovakia	Bratislava	Letisko M.R.Stefanika – Airport Bratislava, A.S.	www.airportbratislava.sk
204	Slovenia	Maribor	Aerodrom Maribor D.O.O.	www.maribor-airport.si
205	Slovenia	Ljubljana	Aerodrom Ljubljana,	www.lju-airport.si
206	Spain	A Coruña	A Coruña	www.aena.es
207	Spain	Albacete	Albacete	www.aena.es
208	Spain	Alicante	Alicante	www.aena.es
209	Spain	Almeria	Almeria	www.aena.es

210	Spain	Asturias	Asturias	www.aena.es
211	Spain	Badajoz	Badajoz	www.aena.es
212	Spain	Barcelona	Barcelona	www.aena.es
213	Spain	Bilbao	Bilbao	www.aena.es
214	Spain	Burgos	Burgos	www.aena.es
215	Spain	Ceuta /Helipuerto	Ceuta /Helipuerto	www.aena.es
216	Spain	Cordoba	Cordoba	www.aena.es
217	Spain	El Hierro	El Hierro	www.aena.es
218	Spain	Fgl Granada-Jaen	Fgl Granada-Jaen	www.aena.es
219	Spain	Fuerteventura	Fuerteventura	www.aena.es
220	Spain	Girona	Airport - Girona-Costa Brava	www.aena.es
221	Spain	Gran Canaria	Gran Canaria	www.aena.es
222	Spain	Huesca-Pirineos	Huesca-Pirineos	www.aena.es
223	Spain	Ibiza	Ibiza	www.aena.es
224	Spain	Jerez De La Frontera	Jerez De La Frontera	www.aena.es
225	Spain	La Gomera	La Gomera	www.aena.es
226	Spain	La Palma	La Palma	www.aena.es
227	Spain	Lanzarote	Lanzarote	www.aena.es
228	Spain	Leon	León Airport	www.aena.es
229	Spain	Logroño	Logroño	www.aena.es
230	Spain	Madrid-Barajas	Madrid-Barajas	www.aena.es
231	Spain	Madrid-Cuatro Vientos	Madrid - Cuatro Vientos Airport	www.aena.es
232	Spain	Madrid-Torrejon	Madrid-Torrejon	www.aena.es
233	Spain	Malaga	Malaga	www.aena.es
234	Spain	Melilla	Melilla	www.aena.es
235	Spain	Menorca	Menorca	www.aena.es
236	Spain	Murcia-San Javier	Murcia-San Javier	www.aena.es
237	Spain	Palma De Mallorca	Palma De Mallorca	www.aena.es
238	Spain	Pamplona	Pamplona	www.aena.es
239	Spain	Reus	Reus	www.aena.es
240	Spain	Salamanca	Salamanca	www.aena.es
241	Spain	San Sebastian	San Sebastian	www.aena.es
242	Spain	Santander	Santander	www.aena.es
243	Spain	Santiago	Santiago	www.aena.es
244	Spain	Sevilla	Sevilla	www.aena.es
245	Spain	Tenerife Norte	Tenerife Norte	www.aena.es
246	Spain	Tenerife Sur	Tenerife Sur	www.aena.es
247	Spain	Valencia	Valencia	www.aena.es
248	Spain	Valladolid	Valladolid	www.aena.es
249	Spain	Vigo	Vigo	www.aena.es
250	Spain	Vitoria	Vitoria	www.aena.es
251	Spain	Zaragoza	Zaragoza	www.aena.es
252	Sweden	Göteborg-Landvetter	Göteborg - Landvetter Airport	www.lfv.se
253	Sweden	Jönköping	Jönköping	www.lfv.se
254	Sweden	Karlstad	Karlstad	www.lfv.se
255	Sweden	Kiruna	Kiruna	www.lfv.se
256	Sweden	Luleå	Luleå	www.lfv.se

257	Sweden	Malmö	Malmö	www.lfv.se
258	Sweden	Ronneby	Ronneby	www.lfv.se
259	Sweden	Skellefteå	Skellefteå	www.lfv.se
260	Sweden	Stockholm-Arlanda	Stockholm-Arlanda	www.lfv.se
261	Sweden	Stockholm-Bromma	Stockholm-Bromma	www.lfv.se
262	Sweden	Sundsvall-Härnösand	Sundsvall-Härnösand	www.lfv.se
263	Sweden	Umeå City Airport	Umeå City Airport	www.lfv.se
264	Sweden	Visby	Visby	www.lfv.se
265	Sweden	Åre Östersund	Åre Östersund	www.lfv.se
266	Sweden	Ängelholm-Helsingbor	Ängelholm-Helsingbor	www.lfv.se
267	Sweden	Örnsköldsvik	Örnsköldsvik	www.lfv.se
268	Switzerland	Bern	Flughafen Bern-Belp	www.flughafenbern.ch
269	Switzerland	Basle-Mulhouse	Aeroport De Bale-Mulhouse	www.euroairport.com
270	Switzerland	Geneve	Aeroport De Geneve	www.gva.ch
271	Switzerland	Agno	Aeroporto Citta Di Lugano	www.lugano-airport.ch
272	Switzerland	Zurich	Unique (Flughafen Zurich Ag)	www.zurich-airport.com
273	Turkey	Pendik	Istanbul - Sabiha Gökçen International Airport	www.sgairport.com
274	Turkey	Antalya	Fraport IC Đçtas Antalya Airport Terminal Investment And Management Inc	www.aytport.com
275	Ukraine	Kiev	Kiev-Borispol Airport	www.kbp.kiev.ua
276	United Kindom	Bournemouth	Bournemouth	www.bournemouthairport.com
277	United Kindom	Midland	East Midlands International	www.emacargo.com
278	United Kindom	Benbecula	Benbecula	www.hial.co.uk
279	United Kindom	Kent	Kent International	www.kia-m.com
280	United Kindom	Penzance	Lands End	www.landsendairport.co.uk
281	United Kindom	Leeds Bradford	Leeds Bradford International Airport	www.lbia.co.uk
282	United Kindom	Liverpool	Liverpool John Lennon Airport	www.liverpoolairport.com
283	United Kindom	London	Southend	www.southendairport.com
284	United Kindom	Cardiff Wales	Cardiff Wales	www.tbicardiffairport.com
285	United Kindom	Newcastle	Newcastle	www.newcastleinternational.co.uk
286	United Kindom	Belfast	Belfast International	www.belfastairport.com
287	United Kindom	Belfast	Belfast City (George Best)	www.belfastcityairport.com
288	United Kindom	Birmingham	Birmingham	www.bhx.co.uk
289	United Kindom	Blackpool	Blackpool	www.blackpoolairport.com
290	United Kindom	Bristol	Bristol	www.bristolairport.co.uk
291	United Kindom	London	Gatwick	www.baa.com
292	United Kindom	London	Heathrow	www.baa.com
293	United Kindom	London	Stansted	www.baa.com
294	United Kindom	Aberdeen	Aberdeen	www.baa.com
295	United Kindom	Glasgow	Glasgow	www.baa.com
296	United Kindom	Eglinton	City Of Derry (Eglinton)	www.cityofderryairport.com
297	United Kindom	Coventry	Coventry	www.coventry-airport.co.uk
298	United Kindom	Dundee	Dundee	www.dundeecity.gov.uk
299	United Kindom	Durham Tees Valley	Durham Tees Valley	www.durhamteesvalleyairport.com

300	United Kindom	Edinburgh	Edinburgh Airport	www.edinburghairport.com
301	United Kindom	Exeter	Exeter	www.exeter-airport.co.uk
302	United Kindom	Gloucestershire	Gloucestershire	www.gloucestershireairport.co.uk
303	United Kindom	Barra	Barra	www.hial.co.uk
304	United Kindom	Inverness	Inverness	www.hial.co.uk
305	United Kindom	Islay	Islay	www.hial.co.uk
306	United Kindom	Isles Of Scilly (Tresco)	Isles Of Scilly (Tresco)	www.hial.co.uk
307	United Kindom	Kirkwall	Kirkwall	www.hial.co.uk
308	United Kindom	Humberside	Humberside International Airport	www.humbersideairport.co.uk
309	United Kindom	London	London City	www.londoncityairport.com
310	United Kindom	London	Luton	www.london-luton.co.uk
311	United Kindom	Manchester	Manchester	www.manchesterairport.co.uk
312	United Kindom	Cambridge	Cambridge	www.marshallaerospace.com
313	United Kindom	Newquay	Newquay	www.newquaycornwallairport.co.uk
314	United Kindom	Doncaster Sheffield	Doncaster Sheffield Airport	www.robinhoodairport.com

Appendix 2. Pearson Chi-Square for Ownership and virtual variables

F1Ownership * V1BissnessForAirlines

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.471[a]	2	.003
Likelihood Ratio	11.565	2	.003
Linear-by-Linear Association	.993	1	.319
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 25,50.

F1Ownership * V1BookingOnline

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.501[a]	2	.779
Likelihood Ratio	.486	2	.784
Linear-by-Linear Association	.361	1	.548
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 6,46.

F1Ownership * V1OperatingAirlines

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.632[a]	2	.729
Likelihood Ratio	.623	2	.732
Linear-by-Linear Association	.005	1	.942
N of Valid Cases	314		

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 1,49.

F1Ownership * V1FlighInformation

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.628[a]	2	.060
Likelihood Ratio	4.658	2	.097
Linear-by-Linear Association	1.957	1	.162
N of Valid Cases	314		

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 2,65.

F1Ownership * V1WebCheckIn

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.149[a]	2	.563
Likelihood Ratio	1.141	2	.565
Linear-by-Linear Association	.772	1	.380
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 22,52.

F1Ownership * V1Security

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.281[a]	2	.000
Likelihood Ratio	20.751	2	.000
Linear-by-Linear Association	1.521	1	.218
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 12,09.

F1Ownership * V1FlightSchools

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.231[a]	2	.001
Likelihood Ratio	13.935	2	.001
Linear-by-Linear Association	2.455	1	.117
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 5,80.

F1Ownership * V1Heliport

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.740[a]	2	.419
Likelihood Ratio	1.714	2	.425
Linear-by-Linear Association	.182	1	.669
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 5,96.

F1Ownership * V1weather

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	40.199[a]	2	.000
Likelihood Ratio	35.452	2	.000
Linear-by-Linear Association	31.456	1	.000
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 11,26.

F1Ownership * V1DutyfreeBars

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)

Pearson Chi-Square	3.964[a]	2	.138
Likelihood Ratio	4.269	2	.118
Linear-by-Linear Association	1.027	1	.311
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 6,79.

F1Ownership * V1LandsideTransportation

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.698[a]	2	.705
Likelihood Ratio	.702	2	.704
Linear-by-Linear Association	.696	1	.404
N of Valid Cases	314		

a. 1 cells (16,7%) have expected count less than 5. The minimum expected count is 4,80.

F1Ownership * V1Parking

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.656[a]	2	.437
Likelihood Ratio	1.511	2	.470
Linear-by-Linear Association	1.264	1	.261
N of Valid Cases	314		

a. 1 cells (16,7%) have expected count less than 5. The minimum expected count is 4,64.

F1Ownership * V1PostOffice

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.589[a]	2	.001
Likelihood Ratio	14.190	2	.001

Linear-by-Linear Association	1.804	1	.179
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 15,73.

F1Ownership * V1CustomsOffice

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.762[a]	2	.013
Likelihood Ratio	8.924	2	.012
Linear-by-Linear Association	.086	1	.770
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 18,38.

F1Ownership * V1Banking

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.128[a]	2	.004
Likelihood Ratio	11.462	2	.003
Linear-by-Linear Association	1.144	1	.285
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 16,89.

F1Ownership * V1SpecialService

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.280[a]	2	.002
Likelihood Ratio	12.747	2	.002
Linear-by-Linear Association	3.473	1	.062
N of Valid Cases	314		

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.280[a]	2	.002
Likelihood Ratio	12.747	2	.002
Linear-by-Linear Association	3.473	1	.062
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 19,71.

F1Ownership * V1Internet

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.185[a]	2	.006
Likelihood Ratio	10.375	2	.006
Linear-by-Linear Association	1.807	1	.179
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 21,86.

F1Ownership * V1Hotel

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.929[a]	2	.000
Likelihood Ratio	16.868	2	.000
Linear-by-Linear Association	1.952	1	.162
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 14,08.

F1Ownership * V1CarRental

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)

Pearson Chi-Square	16.167[a]	2	.000
Likelihood Ratio	17.050	2	.000
Linear-by-Linear Association	1.375	1	.241
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 13,75.

F1Ownership * V1TourOperators

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.299[a]	2	.071
Likelihood Ratio	5.468	2	.065
Linear-by-Linear Association	1.263	1	.261
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 15,40.

F1Ownership * V1InformationAairportHistory

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.993[a]	2	.004
Likelihood Ratio	10.013	2	.007
Linear-by-Linear Association	1.168	1	.280
N of Valid Cases	314		

a. 1 cells (16,7%) have expected count less than 5. The minimum expected count is 3,97.

F1Ownership * V1Investment

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	33.729[a]	2	.000
Likelihood Ratio	33.260	2	.000

Linear-by-Linear Association	1.018	1	.313
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 16,23.

F1Ownership * V1Stakeholder

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.624[a]	2	.000
Likelihood Ratio	31.308	2	.000
Linear-by-Linear Association	.188	1	.665
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 14,24.

F1Ownership * V1Tec1inf

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.352[a]	2	.000
Likelihood Ratio	24.827	2	.000
Linear-by-Linear Association	.337	1	.562
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 11,76.

F1Ownership * V1JobInformation

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.394[a]	2	.006
Likelihood Ratio	10.009	2	.007
Linear-by-Linear Association	2.720	1	.099
N of Valid Cases	314		

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.394[a]	2	.006
Likelihood Ratio	10.009	2	.007
Linear-by-Linear Association	2.720	1	.099
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 8,61.

F1Ownership * V1InformationCrew

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.439[a]	2	.009
Likelihood Ratio	8.189	2	.017
Linear-by-Linear Association	7.206	1	.007
N of Valid Cases	314		

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 2,48.

F1Ownership * V1CargoInf

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	49.335[a]	2	.000
Likelihood Ratio	51.876	2	.000
Linear-by-Linear Association	5.576	1	.018
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 23,35.

F1Ownership * V1BusinessAtairport

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)

Pearson Chi-Square	21.095[a]	2	.000
Likelihood Ratio	22.425	2	.000
Linear-by-Linear Association	6.669	1	.010
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 19,71.

F1Ownership * V1Advertising

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.548[a]	2	.280
Likelihood Ratio	2.759	2	.252
Linear-by-Linear Association	2.266	1	.132
N of Valid Cases	314		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 6,29.

Appendix 3. Pearson Chi-Square Airport Passenger Traffic(yes) and virtual variables

V1BusinessForAirlines * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	235.990[a]	8	.000
Likelihood Ratio	295.741	8	.000
Linear-by-Linear Association	180.148	1	.000
N of Valid Cases	314		

a. 2 cells (11,1%) have expected count less than 5. The minimum expected count is 2,94.

V1BookingOnline * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.096[a]	8	.002
Likelihood Ratio	25.996	8	.001
Linear-by-Linear Association	15.756	1	.000
N of Valid Cases	314		

a. 7 cells (38,9%) have expected count less than 5. The minimum expected count is ,75.

V1OperatingAirlines * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.036[a]	8	.081

Likelihood Ratio	14.793	8	.063
Linear-by-Linear Association	7.430	1	.006
N of Valid Cases	314		

a. 9 cells (50,0%) have expected count less than 5. The minimum expected count is ,17.

V1FlighInformation * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	43.720[a]	8	.000
Likelihood Ratio	37.464	8	.000
Linear-by-Linear Association	24.006	1	.000
N of Valid Cases	314		

a. 9 cells (50,0%) have expected count less than 5. The minimum expected count is ,31.

V1WebCheckIn * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	37.090[a]	8	.000
Likelihood Ratio	41.254	8	.000
Linear-by-Linear Association	27.930	1	.000
N of Valid Cases	314		

a. 2 cells (11,1%) have expected count less than 5. The minimum expected count is 2,60.

V1Security * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	121.644[a]	8	.000
Likelihood Ratio	132.409	8	.000
Linear-by-Linear Association	92.269	1	.000
N of Valid Cases	314		

a. 4 cells (22,2%) have expected count less than 5. The minimum expected count is 1,39.

V1FlightSchools * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.837[a]	8	.159
Likelihood Ratio	11.414	8	.179
Linear-by-Linear Association	3.134	1	.077
N of Valid Cases	314		

a. 7 cells (38,9%) have expected count less than 5. The minimum expected count is ,67.

V1Heliport * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.566[a]	8	.696
Likelihood Ratio	7.345	8	.500
Linear-by-Linear Association	1.249	1	.264
N of Valid Cases	314		

a. 7 cells (38,9%) have expected count less than 5. The minimum expected count is ,69.

V1weather * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.126[a]	8	.744
Likelihood Ratio	5.264	8	.729
Linear-by-Linear Association	2.336	1	.126
N of Valid Cases	314		

a. 4 cells (22,2%) have expected count less than 5. The minimum expected count is 1,30.

V1DutyfreeBars * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	148.916[a]	8	.000
Likelihood Ratio	120.917	8	.000
Linear-by-Linear Association	70.410	1	.000
N of Valid Cases	314		

a. 6 cells (33,3%) have expected count less than 5. The minimum expected count is ,78.

V1LandsideTransportation * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.852[a]	8	.001
Likelihood Ratio	30.672	8	.000
Linear-by-Linear Association	19.489	1	.000
N of Valid Cases	314		

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.852[a]	8	.001
Likelihood Ratio	30.672	8	.000
Linear-by-Linear Association	19.489	1	.000
N of Valid Cases	314		

a. 7 cells (38,9%) have expected count less than 5. The minimum expected count is ,55.

V1Parking * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	38.623[a]	8	.000
Likelihood Ratio	37.951	8	.000
Linear-by-Linear Association	25.180	1	.000
N of Valid Cases	314		

a. 7 cells (38,9%) have expected count less than 5. The minimum expected count is ,54.

V1PostOffice * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	132.362[a]	8	.000
Likelihood Ratio	149.039	8	.000
Linear-by-Linear Association	107.715	1	.000
N of Valid Cases	314		

a. 2 cells (11,1%) have expected count less than 5. The minimum expected count is 1,82.

V1CustomsOffice * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	131.697[a]	8	.000
Likelihood Ratio	151.261	8	.000
Linear-by-Linear Association	113.079	1	.000
N of Valid Cases	314		

a. 2 cells (11,1%) have expected count less than 5. The minimum expected count is 2,12.

V1Banking * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	133.806[a]	8	.000
Likelihood Ratio	156.535	8	.000
Linear-by-Linear Association	107.090	1	.000
N of Valid Cases	314		

a. 2 cells (11,1%) have expected count less than 5. The minimum expected count is 1,95.

V1SpecialService * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	145.860[a]	8	.000
Likelihood Ratio	166.142	8	.000
Linear-by-Linear Association	105.515	1	.000
N of Valid Cases	314		

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	145.860[a]	8	.000
Likelihood Ratio	166.142	8	.000
Linear-by-Linear Association	105.515	1	.000
N of Valid Cases	314		

a. 2 cells (11,1%) have expected count less than 5. The minimum expected count is 2,27.

V1Internet * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	120.200[a]	8	.000
Likelihood Ratio	134.805	8	.000
Linear-by-Linear Association	105.715	1	.000
N of Valid Cases	314		

a. 2 cells (11,1%) have expected count less than 5. The minimum expected count is 2,52.

V1Hotel * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	109.636[a]	8	.000
Likelihood Ratio	121.495	8	.000
Linear-by-Linear Association	87.890	1	.000
N of Valid Cases	314		

a. 3 cells (16,7%) have expected count less than 5. The minimum expected count is 1,62.

V1CarRental * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	114.735[a]	8	.000
Likelihood Ratio	129.816	8	.000
Linear-by-Linear Association	92.962	1	.000
N of Valid Cases	314		

a. 3 cells (16,7%) have expected count less than 5. The minimum expected count is 1,59.

V1TourOperators * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	83.069[a]	8	.000
Likelihood Ratio	93.941	8	.000
Linear-by-Linear Association	67.062	1	.000
N of Valid Cases	314		

a. 2 cells (11,1%) have expected count less than 5. The minimum expected count is 1,78.

V1InformationAairportHistory * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.387[a]	8	.052
Likelihood Ratio	19.040	8	.015
Linear-by-Linear Association	10.024	1	.002
N of Valid Cases	314		

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.387[a]	8	.052
Likelihood Ratio	19.040	8	.015
Linear-by-Linear Association	10.024	1	.002
N of Valid Cases	314		

a. 8 cells (44,4%) have expected count less than 5. The minimum expected count is ,46.

V1Investment * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.902[a]	8	.015
Likelihood Ratio	22.549	8	.004
Linear-by-Linear Association	10.257	1	.001
N of Valid Cases	314		

a. 2 cells (11,1%) have expected count less than 5. The minimum expected count is 1,87.

V1Stakeholder * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.443[a]	8	.001
Likelihood Ratio	31.210	8	.000
Linear-by-Linear Association	14.110	1	.000
N of Valid Cases	314		

a. 3 cells (16,7%) have expected count less than 5. The minimum expected count is 1,64.

V1EnviromTec1inf * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.587[a]	8	.003
Likelihood Ratio	28.948	8	.000
Linear-by-Linear Association	18.070	1	.000
N of Valid Cases	314		

a. 4 cells (22,2%) have expected count less than 5. The minimum expected count is 1,36.

V1JobInformation * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.248[a]	8	.028
Likelihood Ratio	17.872	8	.022
Linear-by-Linear Association	11.584	1	.001
N of Valid Cases	314		

a. 3 cells (16,7%) have expected count less than 5. The minimum expected count is ,99.

V1InformationCrew * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.049[a]	8	.015
Likelihood Ratio	15.034	8	.058
Linear-by-Linear Association	.233	1	.629
N of Valid Cases	314		

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.049[a]	8	.015
Likelihood Ratio	15.034	8	.058
Linear-by-Linear Association	.233	1	.629
N of Valid Cases	314		

a. 9 cells (50,0%) have expected count less than 5. The minimum expected count is ,29.

V1CargoInf * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	69.506[a]	8	.000
Likelihood Ratio	73.642	8	.000
Linear-by-Linear Association	58.891	1	.000
N of Valid Cases	314		

a. 2 cells (11,1%) have expected count less than 5. The minimum expected count is 2,69.

V1BusinessAtairport * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	66.716[a]	8	.000
Likelihood Ratio	72.195	8	.000
Linear-by-Linear Association	56.635	1	.000
N of Valid Cases	314		

a. 2 cells (11,1%) have expected count less than 5. The minimum expected count is 2,27.

V1Advertising * FAirportTraffic

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.721[a]	8	.000
Likelihood Ratio	34.198	8	.000
Linear-by-Linear Association	23.977	1	.000
N of Valid Cases	314		

a. 7 cells (38,9%) have expected count less than 5. The minimum expected count is ,73.