ASPECTS OF COMPETITIVE PERFORMANCE: AN EXPLORATORY STUDY OF AIR CARGO PLAYERS IN BRAZIL

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Abstract

Increasing competition demands more competitiveness from companies and constant and accurate information about competitors and the market place. This requires the development of performance evaluation methods. Although airport cargo revenues are larger than airport passenger's, no survey has provided a detailed study on competitive performance factors of air cargo players in Brazil. This paper has surveyed major airlines operating in Brazil and major air cargo dispatchers (domestic and international). The results of this work are directly useful to INFRAERO, to the airlines and to the Brazilian Civil Aviation Agency (ANAC), in order to suggest improvements in the efficiency of the air sector.

Keywords: competitive performance, assessment of logistical performance, air cargo players.

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1. INTRODUCTION AND RATIONALE

The demand for air cargo transport in Brazil has risen sharply. From 1994 to 2003, the domestic and international air cargo traffic grew up by 35.9 %. In 2005, the São Paulo/Guarulhos International Airport handled over 470,000 tons of cargo, placing itself at the 36th in the Airports Council International (ACI) ranking of airports worldwide. Air cargo has become an important revenue stream for airlines and airport operators. Cargo (warehousing and wharfage) contributes with about 30% of the total revenue for INFRAERO, the state-owned company that manages and operates the 66 largest airports in Brazil (INFRAERO, 2002).

According to the cargo transport center, air transport accounts for just 0.33% of the cargo transported in Brazil, in ton-km (GEIPOT, 2005). However, considering the value of the cargo transported by air in foreign trade, its contribution is extremely relevant. Air transport in year 2000 accounted for 28.9% of Brazil's total imports, and 8.8% of total exports (Keedi, 2001), dollar wise. Albeit expressing significant numbers, air transport in Brazil still has an enormous growth potential, mainly when compared to developed countries.

As very large country, Brazil attracts important investment to the air cargo market. The country is not well served by railroads, and the highway network, although more developed than the previous one, is poorly maintained. Waterways, which in many regions would be valuable instruments of integration, are not integrated either to the transportation system. There is also the high cost sensitivity problem of international cargos to which is essential the usage of the cargo capacity on the return legs also. This import-export balance is hard to achieve, as many items do not justify the cost of air transport, hence sea or road transport is largely used. In some cases, cargo weight and/or size are not compatible to the structure of cargo aircrafts

Various studies about air transport performance have been conducted in recent years (Doganis et Al, 1978; Assailly, 1989; Martin-Cejas, 1996; Pacheco, 2000; Carvalho, 2002; Sarkis and Talluri, 2004; Yoshida, 2004). However, most of the work has focused on passenger operations, not on air cargo.

Studies about the air cargo market, its variables, the players in the segment, as well as about the necessary knowledge to make any changes, are still missing.

This survey intends to identify the main competitive performance aspects according to the perceptions of main air cargo players in Brazil. The following variables will be collected:

a) Aspects of performance valued by cargo agents with regard to airlines.

b) Aspects of performance valued by the airlines with regard to airports structure.

To satisfy this need, this paper has surveyed major airlines operating in Brazil and major air cargo dispatchers (domestic and international). The results of this work are directly useful to INFRAERO, the airlines and to the Brazilian Civil Aviation Agency (ANAC), in order to suggest improvements in the efficiency of the air sector efficiency.

2. OVERVIEW OF THE LITERATURE – ASSESSMENT OF LOGISTICAL PERFORMANCE

The logistics are a key component of the success of any business. The current competitive environment requires increasing levels of efficiency and effectiveness of the logistical performance of the participants of each market, becoming as a critical factor for their success.

According to Christopher (1997), the challenges faced by the logistics area are related to the presentation of services to the client, delivery time, the industry globalization factor, and the organizational integration. Added to this is the challenge to understand and to apply the concept of logistics into companies. Each organization’s competency determines how all these challenges are administered to serve the client in the right time, with the right quantity, at an appropriate quality / cost ratio for products and services.

According to Dornier (2000), logistics integration and the effects that globalization has brought to it are of great impact on the definition and on the usage of logistics performance measurements. Most companies will need new measurements and databanks to manage their logistics, as existing systems will not provide the necessary information. The relevant logistical indicators are the key control system tools to allow coherent actions and strategic decisions.

Slack et al (1997), Ballou (2004) and Corrêa et al (2001), defined the main aspects of competitive performance from the client standpoint (Figure 1). The client standpoint of monitoring aspects of the competitive performance was the blueprint behind this survey, whose methodology will be explained in detail in the next section.

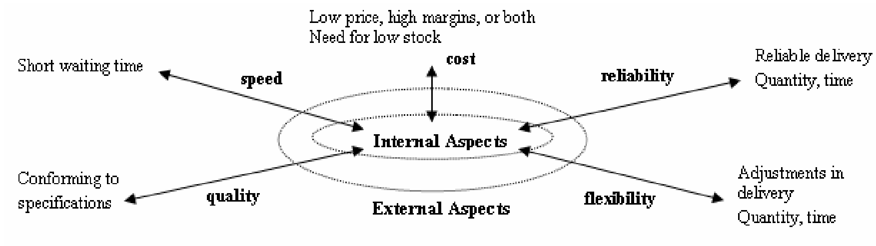

Figure 1: External performance aspects
Source: Adapted from Slack et al (1997)

3. METHODOLOGY

The survey was planned as a detailed study of the aspects of the competitive performance of the players within the Brazilian air export market. The exploratory polling method was used (Hoppen et al, 1996), with a qualitative emphasis on certain aspects of the population to be studied.

3.1. Survey stages

The survey was done in three distinct stages, as illustrated in Table 1.

3.2 Analysis model for aspects of competitive performance

The model in Figure 2 was employed to determine the aspects of a competitive performance of the players in the air cargo transport in Brazil.

The model in Figure 2 shows that data will be collected considering the following:

a) Aspects of performance valued by cargo agents with regard to airlines.

b) Aspects of performance valued by the airlines with regard to airport structure.

Table 1: Survey stages

1st stage: Contact with the players in air transport		
Activities	**Objectives**	**Procedures**
➢Interviews with specialists in the sector.	➢ Learn more about the sector. ➢ Aid the preparation of the questionnaire. ➢ Define the variables to be studied.	➢ Direct and open interviews done by surveyor.
2nd stage: Delimitation of sample and pilot study		
Activities	**Objectives**	**Procedures**
➢ Delimitation of the population and the sample size. ➢ Pre-testing of questionnaire.	➢Define the sample. ➢Validate the data collection instrument.	➢ Application of the survey instrument in eight companies in the sector.
3rd stage: Definitive field work		
Activities	**Objectives**	**Procedures**
➢ Final data collection related to the survey.	➢ Get data and information on the Brazilian air transport players for later evaluation.	➢ Application of the questionnaire for the companies in the sample (excluding pre-test companies).

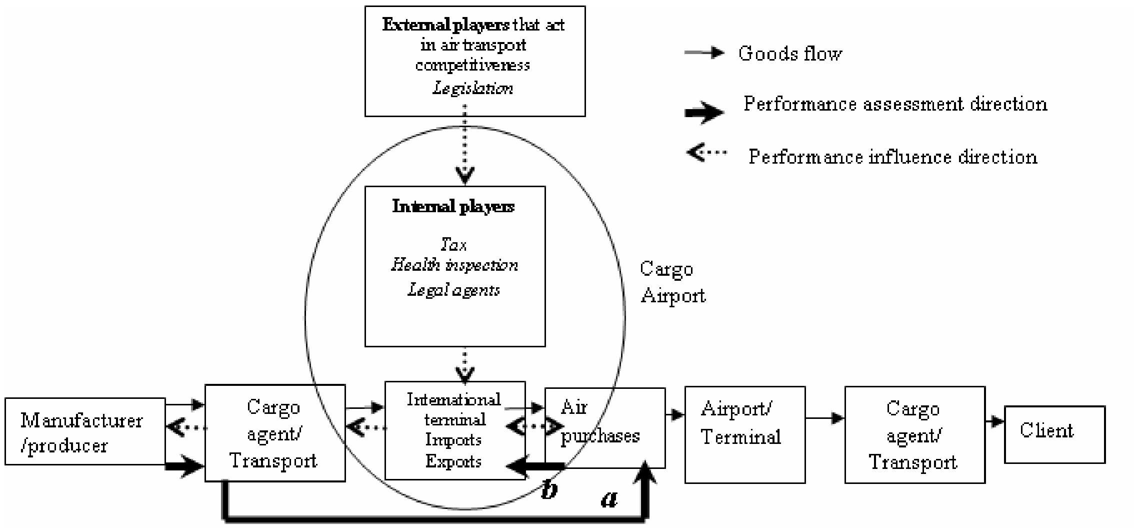

Figure 2: Players on the Brazilian air export market

3.3 Delimitation of the sample of players from Brazilian air transport

According to the established criteria and Table 2, 42 high-level professionals representing 28 companies were selected for the survey, 50% are air cargo agents (eight Brazilian agents and six foreign companies), and the other half comprehending airlines (eight Brazilian airlines and six foreign airlines).

The questionnaire used for the survey was formed by 35 competitive performance factors using cost, speed, reliability, flexibility, and quality of the logistics services for analysis of the airlines through a survey with the Brazilian and foreign agents, and 31 competitive performance factors for analysis of airports through a survey with Brazilian and foreign airlines.

These factors were selected from the literature review (Slack et Al (1997), Ballou (2004) and Corrêa et Al (2001)) and from consultations with specialists in the air sector logistics. A scale of importance was attributed to each factor using scores from 1 to 5, with the results calculated using a mathematical formula that represents the averages and standard deviations.

Table 2: Players from Brazilian air transport

Air cargo agents	
Brazilian air cargo agents	Sky cargas, Variglog, Tam Cargas, Aerocargo, Cargo Express, Vianet Express, Cwb cargo express, Intermodal Transportes
International air cargo agents	DHL, Federal Express, UPS, Tristar Air Cargo, World Courier Air Cargo, World Freight.
Airlines	
Brazilian airlines	Varig (through Variglog), Tam Linhas Aéreas, Gol Linhas Aéreas, Ocean Air Linhas, Aéreas, Beta – Brazilian Express Transportes Aéreos, Skymaster Arlines, TCB – Transportes Charter do Brasil, ABSA - Aerolinhas Brasileiras
International airlines	Federal Express, United Airlines, Lan Chile, Aerolíneas Argentinas, British Airways, Japan Airlines – Jal

4. ANALYSIS AND INTERPRETATION OF THE SURVEY RESULTS

4.1 Aspects of performance valued by cargo agents in regard to airlines

4.1.1 Results of the survey of Brazilian cargo agents

The results of the data collection amongst Brazilian cargo agents are shown in Figure 3. These show that the main factors identified by the survey are related to the service price list and the discounts policy – relative averages weight of 4.875 – determined by the airlines, demonstrating the concern of Brazilian managers (cargo agents) of possible operating cost reductions for their companies. Other factors, such as payment terms – which are directly linked to the service price factor, and showing averages of 4.75 – are also amongst the top items ranked in the survey.

The survey shows the importance of factors linked to the quality and to the level of service, as respondents identified variables such as losses and damages, time length of the procedures, level of service, delivery punctuality , cost management, and optimization of processes (represented by relative averages weight of 4.625).

Surprisingly, factors directly related to cost and spending management were considered to be of little importance for Brazilian cargo agents, namely: route network improvement, dynamic lots sizing, and plans (expansion / service improving – competition strategies). These factors represented a relative average weight of 2.875. It is noted that air cargo companies' managers are not willing to pay certain opportunity costs – planning new business models, involving the creation of new routes, with different destinations and connections in key airports in order to serve all the needs of the clients in question.

It is understood that Brazilian airlines are fighting for domestic and international cargo markets that are already saturated, fighting for revenues that in practice are non-existent. An example of this is the most competitive route on the domestic cargo market, between São Paulo and Manaus. Despite the possibility of generating very high revenues with the creation of adjacent routes to nearby destinations, with more services such as mail, this route generates a huge number of externalities caused by market competition and a lack of operational infrastructure. This leads companies to fight for clients by offering lower prices, thus reducing the profitability of the operation.

Foreign air cargo companies offer different destination options and routes, taking up all the clients and revenues from services not explored by Brazilian companies. Cargo agents that need to transport a certain amount of material to specific places (such as in Africa or Asia) seek the services offered by foreign companies such as FedEx, UPS, or DHL, not even contacting Brazilian companies, which normally do not have the physical structure to provide the service in a timely and reliable manner. These foreign companies are unable to achieve higher service levels, as they practically have monopolies on many routes.

The lack of strategic partnerships of cargo agents weakens the Brazilian airlines' credibility in specific markets. In chemical transport, for example, foreign air cargo companies (with the aid of foreign cargo agents) have for some time offered new warehousing and handling techniques, resulting in reduced risks and increased credibility for their clients. This denotes, then, the lack of contribution of new ideas in the Brazilian cargo transport market by Brazilian companies, which are constantly losing market share to foreign companies with innovative ideas.

4.1.2 Results of the survey of foreign cargo agents

Foreign companies, with a considerable market share, compared to cargo agents in Brazil, and have helped in the survey the results. Numbers can be seen in Figure 4.

Managers of these foreign companies have expressed that their main concerns are with factors directly related to costs and spending. With especial attention to variables related to planning and profit management. The scores directly related to price (discounts, payment periods), service reliability, delivery time deliveries, and company structure are differential factors when compared to Brazilian cargo agents.

Managers of foreign company were deeply concerned with structural issues, since these factors are closely related to the quality of services to be provided. Aspects such as delivery time, dispatch processes optimization, policy management, service plan expansion, and prices, amongst others, scored between 4 and 5, overshadowed the importance of infrastructure and the quality of service improvement.

The work did not covered aspects related to the provision of service to final consumers by cargo agents. Visits to potential clients were undertaken in order to gather necessary information about the market. These visits have revealed the lack of appropriate infrastructure to cope with the requirements of the consumers and are directly related to the lack of training for the professionals involved in cargo handling. Lack of information on the nature of the material handled leads to unnecessary merchandise damages. Finally, lack of the information during the delivery process leads to frequent delivery delays.

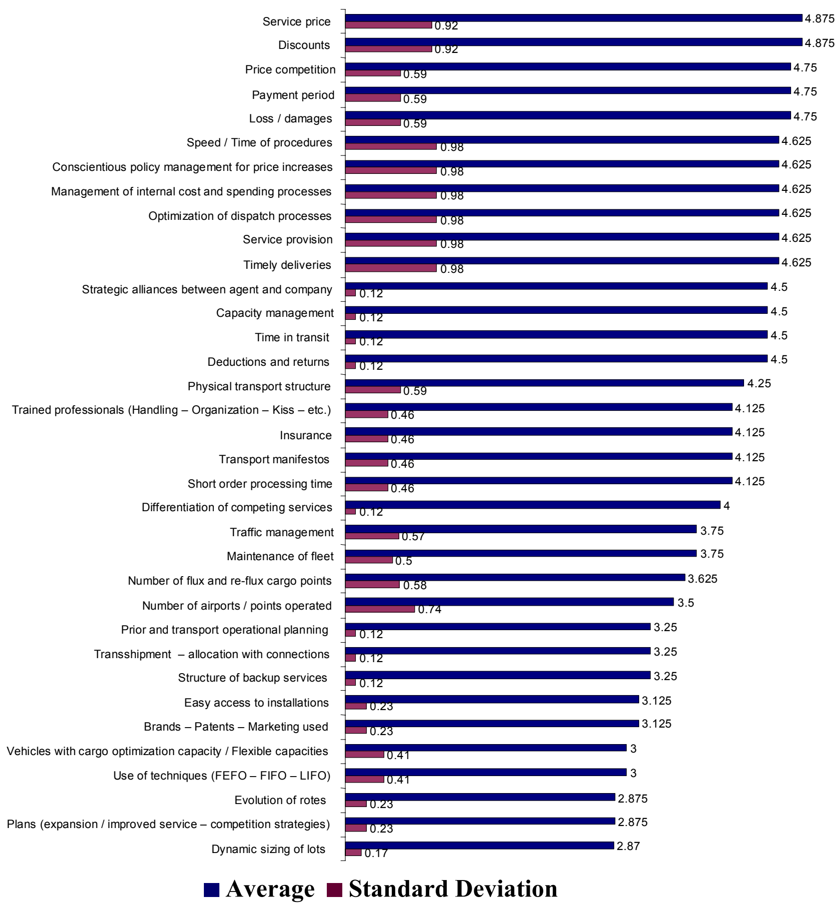

Figure 3: Sample of airline performance factors from the standpoint of Brazilian cargo agents

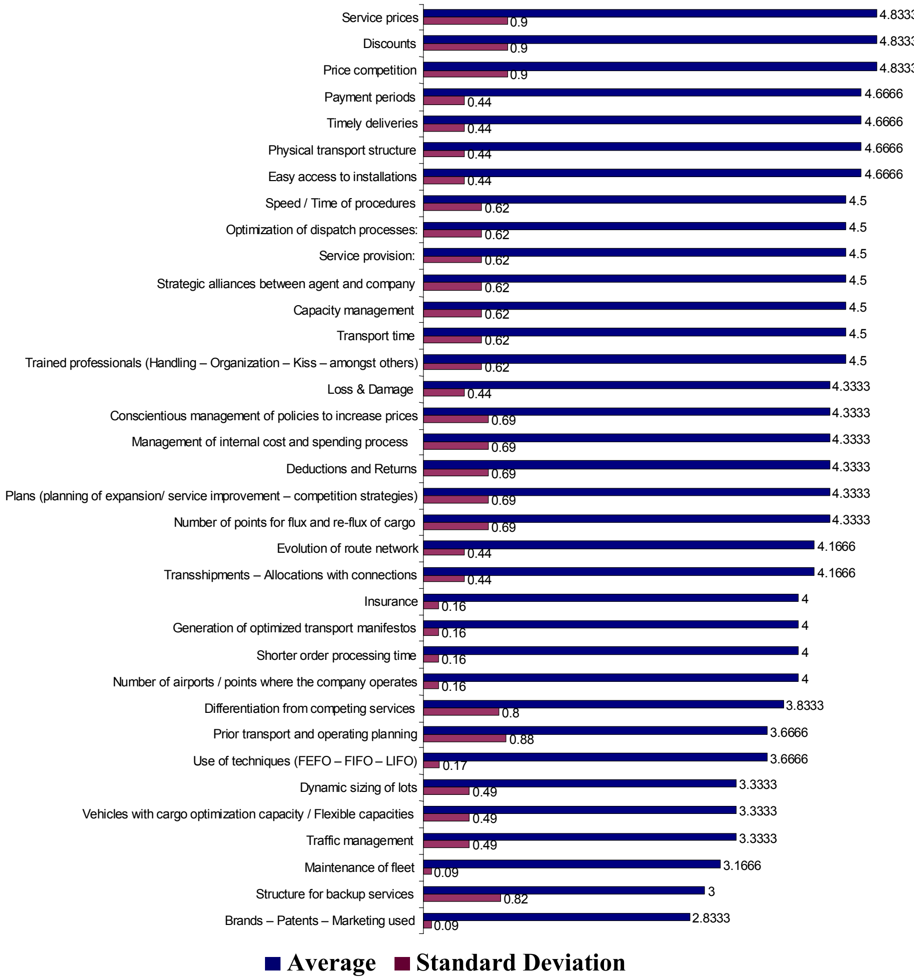

Figure 4: Sample of airline performance factors from the standpoint of foreign cargo agents

4.2 Aspects of performance valued by airlines in regard to airport structure

4.2.1 Results of the survey of Brazilian airlines

Figure 5 illustrates the factors of the airport structure from the standpoint of the Brazilian airlines. The most important factor to be considered by the airport administrators and planners is the distance between the airport and the urban center.

Service fee payment periods, airport fees, non-aeronautical fees, aeronautical discounts, and good airport access are also of interest and scored from 2 to 6. This illustrates the predominance of service costs on Brazilian airlines's concerns.

Two factors stand out in the survey. Top one concern is the high demand for air cargo, which can be explained by the proximity of the airport to the urban center. Even though this factor has scored in 7th place in the questionnaire, it is a relatively high score. A reasonable explanation for this is the focus of the airlines on cost reduction. The proximity of the airport to an urban center is not valued as business opportunity. The other interesting factor is the concern with the availability of runways and with the conditions for taxiing, parking areas and other operational areas.

Aspects of average relevance have scored from 4 to 4.375. These are related to efficiency of the airport administration by means of access to ground installations, convenience of slots, fast aircraft ground service, and other related items.

The survey presents the various complaints about the ground infrastructure for an efficient cargo handling using a mix of transportation alternatives, Cargo terminals need to be improved to speed up the handling of the merchandise entering and leaving the country. Many steps of the bureaucracy of the process are due to government bodies and are not directly related to the transport operation, such as the Brazilian Federal Police, the National Agriculture Agency, and others.

Other items have scored surprisingly low. Periodic airport equipment maintenance and the provision if a healthy environment for service competition seems to not be part of the values shared nurtured by administrative bodies.

4.2.2 Results of foreign airlines

Figure 4 shows the results regarding the most important aspects for the foreign airlines as regards to airport infrastructure.

The first results in the ranking seem to be similar to those above, but with a change regarding the high demand for air cargo services. Air cargo service demand factor is one of the top in the list, showing that foreign airline managers are truly concerned in generating opportunity costs.

Operational structure and management are also of certain relevance by these companies, as well as with Brazilian companies.

Contrary to common belief, this survey showed that a low degree of importance is attributed to the airport experience in air cargo transportation, as well as to the schedule of periodic maintenance. Likewise, airport expansion plans were also considered to be of low importance, which is very surprising, considering the various complaints about the lack of operational infrastructure.

Foreign companies complained about Air Traffic Management in Brazil, regarding the use of old-fashioned equipment for navigation, and the non-homologation of operations using high-technology equipment. Foreign airlines constantly compare the levels of efficiency in the Brazilian navigation process with the ones from their own countries, creating many disagreements and complaints.

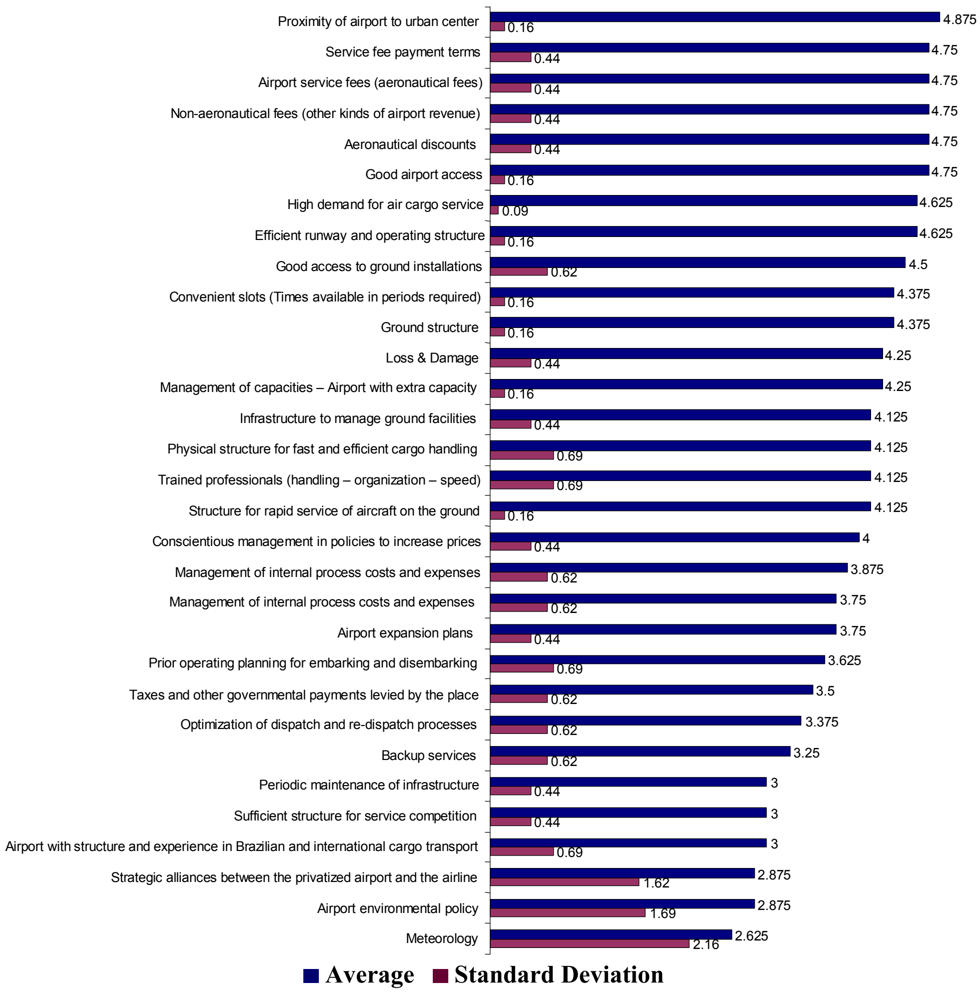

Figure 5: Sample of airport infrastructure performance factors from the standpoint of the Brazilian airlines

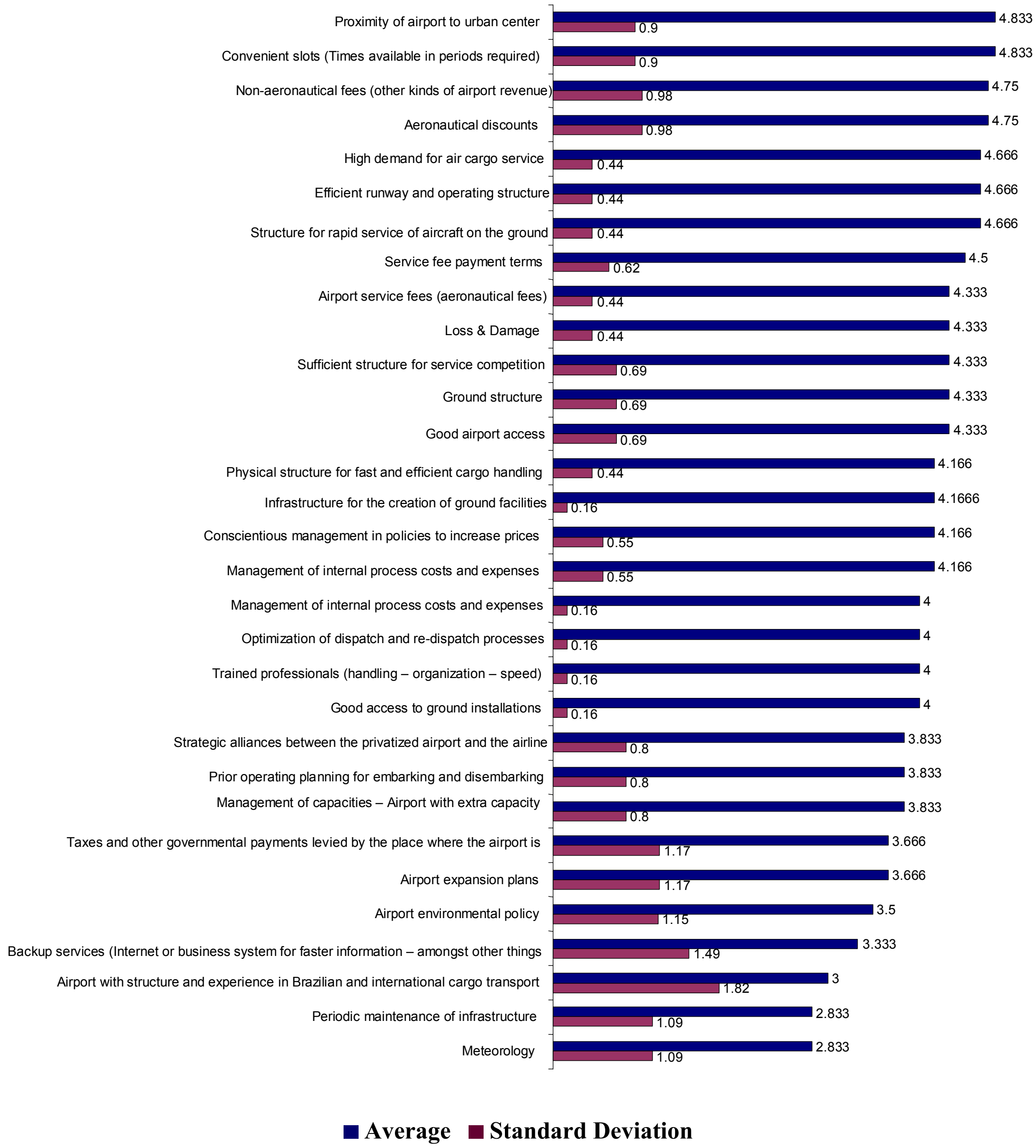

Figure 6: Sample of airport infrastructure performance factors from the standpoint of the foreign airlines

5. FINAL CONSIDERATIONS

The results of this research were achieved using a structured questionnaire developed through many interviews with specialists from the sector. It is thus valid to state that all the aspects covered by this study have been developed to support decision making processes in the air cargo segment. Unfortunately, certain aspects cannot be approached without mentioning the various problems created by the lack of knowledge and planning of cargo companies and airlines, and the excessive bureaucracy of public administrative bodies in the airport infrastructure.

The most relevant aspects found in this survey are related to price and cost reduction, but with a certain focus on the need for planning by airlines and by airport administrators in order to create better operating conditions.

Air cargo agents stated their difficulties in dealing with Brazilian airlines because of the lack of infrastructure. This results in an unbalanced game between national and international agents.

National and international airlines complain about the lack of airport infrastructure and about the air traffic control, unable to handle their operations in a more rapid and efficient way, thus impacting in higher costs.

Large and frequent investments are common in the air transport industry. Nevertheless, investment in airlines or in air cargo companies are of fast results, whilst the ones done in the aeronautical infrastructure take a considerable time to pay back.

It has been noticed that the saturation of the most commonly used cargo airports is related to the lack of planning by administrative bodies. Some investments were not properly done in the past, and more investment is needed to improve the infrastructure in the busiest Brazilian airports, in the areas of aircraft parking, administrative buildings, runways, and so on. It is fare to say that the results expected from an increased and improved capacity will be dependent on the vision of the future for the politicians.

6. FUTURE RESEARCH

A quantitative survey is being prepared to review the air cargo sector performance in Brazil and to identify improvement opportunities. The indicators presented in this work are of extreme importance to the guidance of this referred study.

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