





## 2. Methods and Limitations

This article is a qualitative, inductive interpretive and reasoning. Results were achieved through a multiple-methods approach, combining archival research with the descriptive, single case study, which unit of analysis is the civil airport network in Brazil (Yin, 1988). The sample was investigated in the IATA (2019) database regarding the N=10 busiest airports in Latin America, from 2014 to 2018, and the ten busiest airports worldwide.

This article is limited to civil aviation, specifically passenger transportation. Other activities, such as military aviation and cargo transportation, are not addressed in the present study. Also, activities such as shopping or parking lot administration are not within the scope of this work. Finally, this study is limited to the Latin American civil aviation legislation, as well as the IATA's international standards (IATA, 2019)

## 3. Civil aviation in Latin America: busiest airports

The ten busiest civil aviation airports in Latin America are depicted in the following Figure 2:

#	Airport	Location	Country	IATA	Passenger/year
1	Mexico City International Airport	Mexico City	Mexico	MEX	47,700,547
2	São Paulo-Guarulhos International Airport	São Paulo	Brazil	GRU	42,831,981
3	El Dorado International Airport	Bogotá	Colombia	BOG	32,716,468
4	Cancún International Airport	Cancún	Mexico	CUN	25,202,016
5	Jorge Chávez International Airport	Lima	Peru	LIM	23,659,196
6	Comodoro Arturo Merino Benítez International Airport	Santiago	Chile	SCL	23,324,306
7	São Paulo-Congonhas Airport	São Paulo	Brazil	CGH	21,546,480
8	Brasília International Airport	Brasília	Brazil	BSB	17,622,873
9	Tocumen International Airport	Panama City	Panama	PTY	16,242,679
10	Rio de Janeiro-Galeão International Airport	Rio de Janeiro	Brazil	GIG	15,005,304

Figure 2 Ten busiest Airports in Latin America in 2018. Source: IATA, 2019

Observe in Figure 2 that Mexico City International Airport (MEX) transported near 47 million passengers throughout 2018, five million more passengers than the second busiest airport, Guarulhos International (GRU). Rio de Janeiro International Airport (GIG) occupies the tenth position.

## 3. Civil air transportation in Latin America: 2014-2019<sup>1</sup>

In this section, we described the last five years (2014-2019) of the ten busiest airports in Latin America, with the objective of providing a comparable performance on the evolution of civil air transportation in this period. Figure 3 depicts the ten busiest airports in Latin America in 2017:

<sup>1</sup> Data available until december 2018.

#	Airport	Location	Country	IATA	Passenger/year
1	Mexico City International Airport	Mexico City	Mexico	MEX	44,732,418
2	São Paulo-Guarulhos International Airport	São Paulo	Brazil	GRU	37,765,898
3	El Dorado International Airport	Bogotá	Colombia	BOG	30,989,932
4	Cancún International Airport	Cancún	Mexico	CUN	23,601,509
5	Jorge Chávez International Airport	Lima	Peru	LIM	22,046,042
6	São Paulo-Congonhas Airport	São Paulo	Brazil	CGH	21,859,453
7	Comodoro Arturo Merino Benítez International Airport	Santiago	Chile	SCL	21,426,871
8	Brasília International Airport	Brasília	Brazil	BSB	16,912,680
9	Rio de Janeiro-Galeão International Airport	Rio de Janeiro	Brazil	GIG	16,243,253
10	Tocumen International Airport	Panama City	Panama	PTY	15,616,065

Figure 3 Ten busiest Airports in Latin America in 2017. Source: IATA, 2019

Comparing Figures 2 and 3, observe that while civil air passenger transportation in Mexico International Airport (MEX) increased from near 44 to 47 million passengers transported (approximately 7 percent), the Guarulhos International Airport in Brazil increased its activities in 13 percent in one year (from 37 to 42 million passengers transported). Even with this remarkable performance, it was not enough to regain the first position from MEX. Figure 4 depicts the ten busiest airports in Latin America in 2016:

#	Airport	Location	Country	IATA	Passenger/year
1	Mexico City International Airport	Mexico City	Mexico	MEX	41,710,254
2	São Paulo-Guarulhos International Airport	São Paulo	Brazil	GRU	36,596,326
3	El Dorado International Airport	Bogotá	Colombia	BOG	31,041,841
4	Cancún International Airport	Cancún	Mexico	CUN	21,415,795
5	São Paulo-Congonhas Airport	São Paulo	Brazil	CGH	20,816,957
6	Jorge Chávez International Airport	Lima	Peru	LIM	19,286,158
7	Comodoro Arturo Merino Benítez International Airport	Santiago	Chile	SCL	18,943,231
8	Brasília International Airport	Brasília	Brazil	BSB	17,947,153
9	Rio de Janeiro-Galeão International Airport	Rio de Janeiro	Brazil	GIG	16,103,011
10	Tocumen International Airport	Panama City	Panama	PTY	14,741,937

Figure 4 Ten busiest Airports in Latin America in 2016. Source: IATA, 2019

Observe in the following Figure 5 and 6 that in 2015 and 2014, Guarulhos International Airport (GRU) in Brazil, was the busiest airport in Latin America:

#	Airport	Location	Country	IATA	Passenger/year
1	São Paulo-Guarulhos International Airport	São Paulo	Brazil	GRU	38,984,587
2	Mexico City International Airport	Mexico City	Mexico	MEX	38,433,078
3	El Dorado International Airport	Bogotá	Colombia	BOG	29,956,551
4	Brasília International Airport	Brasília	Brazil	BSB	19,821,796
5	Cancún International Airport	Cancún	Mexico	CUN	19,596,485
6	São Paulo-Congonhas Airport	São Paulo	Brazil	CGH	19,279,644
7	Jorge Chávez International Airport	Lima	Peru	LIM	17,575,919
8	Comodoro Arturo Merino Benítez International Airport	Santiago	Chile	SCL	17,230,567
9	Rio de Janeiro-Galeão International Airport	Rio de Janeiro	Brazil	GIG	16,942,229
10	Tocumen International Airport	Panama City	Panama	PTY	13,434,673

Figure 5 Ten busiest Airports in Latin America in 2015. Source: IATA, 2019

#	Airport	Location	Country	IATA	Passenger/year
1	São Paulo-Guarulhos International Airport	São Paulo	Brazil	GRU	39,573,000
2	Mexico City International Airport	Mexico City	Mexico	MEX	34,255,739
3	El Dorado International Airport	Bogotá	Colombia	BOG	27,430,266
4	Brasília International Airport	Brasília	Brazil	BSB	18,146,405
5	São Paulo-Congonhas Airport	São Paulo	Brazil	CGH	18,134,768
6	Cancún International Airport	Cancún	Mexico	CUN	17,455,353
7	Rio de Janeiro-Galeão International Airport	Rio de Janeiro	Brazil	GIG	17,261,873
8	Jorge Chávez International Airport	Lima	Peru	LIM	16,170,035
9	Comodoro Arturo Merino Benítez International Airport	Santiago	Chile	SCL	16,068,242
10	Tocumen International Airport[65]	Panama City	Panama	PTY	12,782,167

Figure 6 Ten busiest Airports in Latin America in 2014. Source: IATA, 2019

#### 4. The evolution of civil air transportation in Latin America: analysis and discussion

In this section, we analyzed the data displayed in the previous sections. Observe in Figure 7 that the ten busiest airports in Latin American have transported more than one billion passengers (1,204101,411 passengers), increasing the activities in 22.3 percent approximately regarding the last five years:

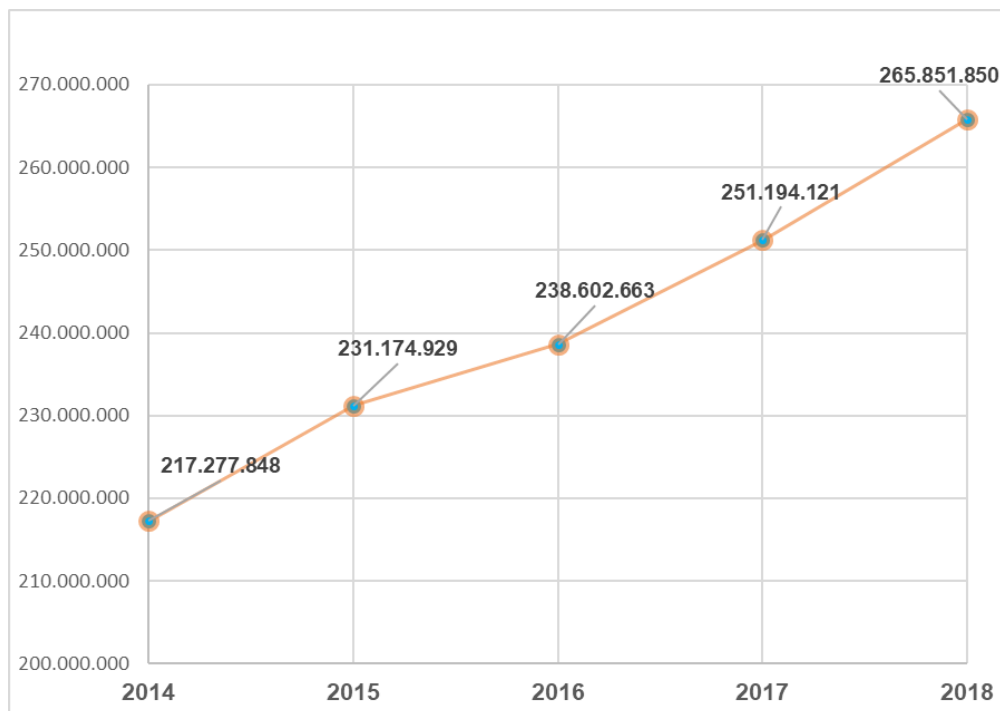


Figure 7 Ten busiest Airports in Latin America from 2014 to 2018. Source: IATA, 2019

A comparison between the two busiest airports, Mexico City International Airport (MEX) and São Paulo Guarulhos International Airport (GRU) is illustrated in the following Figure 8:

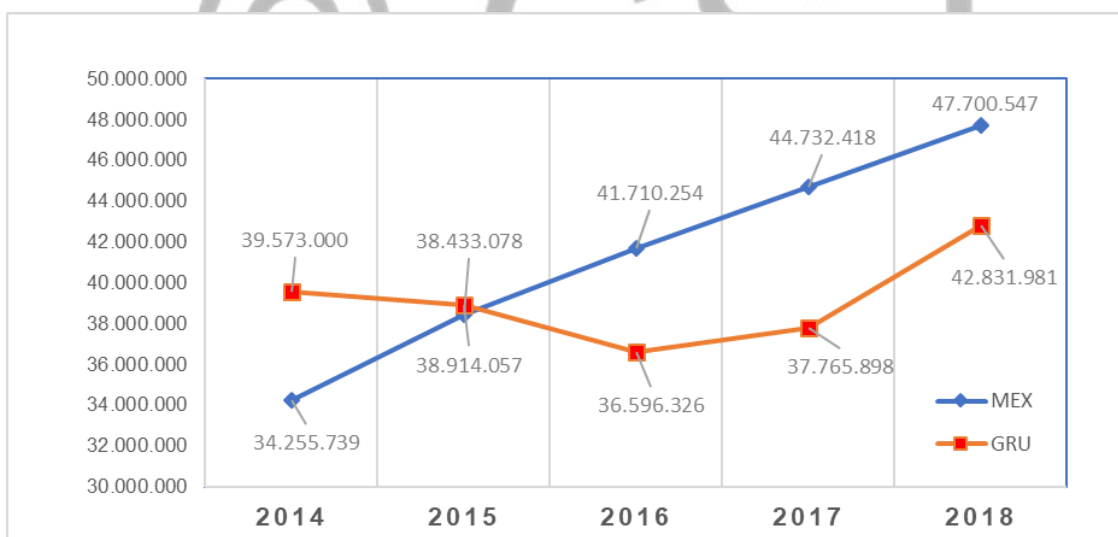


Figure 8 Comparison between MEX and GRU from 2014 to 2018. Source: IATA, 2019

Our analysis indicates a turning point occurred in 2015 when MEX overpassed GRU Airport in the number of passengers carried. The economic crisis in Brazil, combined with increasing touristic activity in Mexico, is the cause of such increasing. For instance, Mexico between 2016 and 2017, welcomed near 34 million tourists, while Brazil welcomed near 12 million tourists, approximately one-third of the tourists that entered in Mexico. The Olympics 2016, hosted in Rio de Janeiro, Brazil, was not enough to increase the number of passengers transported within the Brazilian airports.

Finally, we compared the ten busiest airports in Latin America, from 2014 to 2019, with data available on December 31, 2018, as illustrated in Figure 9, as follows:

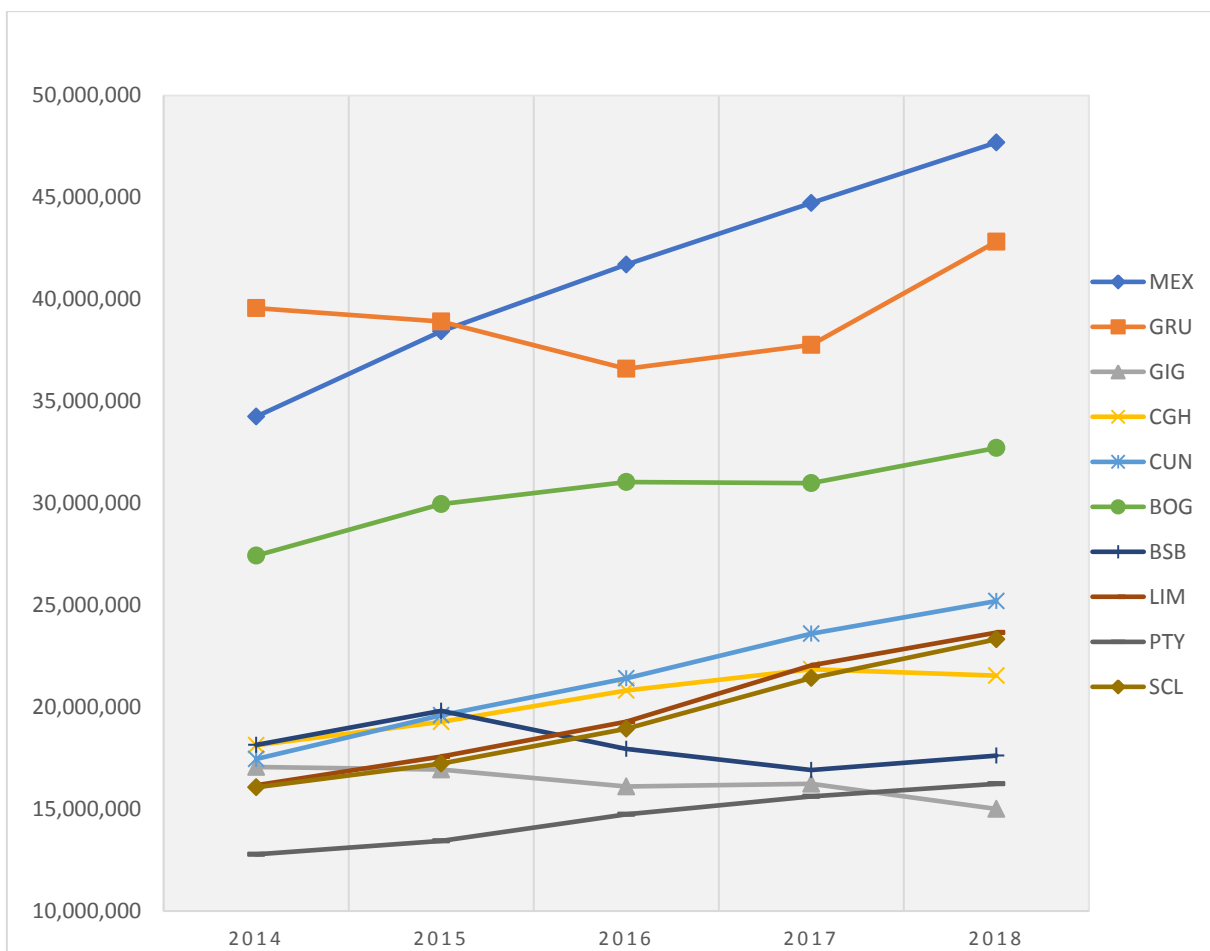


Figure 9 Comparison between the ten busiest Latin American airports, from 2014 to 2018. Source: IATA, 2019

Our analysis also indicated in Figure 9 that CUN, BSB, LIM, PTY, SCL, GIG, and CGH, in the last five years, did not overpass the amount of 25.5 million passengers transported in a year, while the three first positions, MEX, GRU, and BOG have transported the minimum of 27 million passengers approximately. Evidence also suggests that MEX, GRU, and BOG keep the distance from the seven airports as mentioned above up to 7 million passengers in 2019-2020. On average, the ten busiest airports in Latin America increased the number of passengers transported in the last five years by 5.02 percent per year, as shown in Figure 9.

Finally, the ups and downs are explained by an increase in tourist demand, especially MEX, CUN, BOG, or downturns in the Brazilian airports due to a decrease of touristic activity, motivated by urban uprising violence, economic crisis during the last five years.

### 5. Future Research

For future research, it is encouraged the investigation of the impact of tourism in the Latin American airport network, also comparing investments in airport expansion, such as conducted in 2019 by SCL and GIG, in turn, might shift the results for the next five years, for instance. Also, comparing the investments made in infrastructure combined with the federal concessions recently adopted, as GIG

recently (2014). The case will be revisited in the future to assess the Latin American airport network expansion. Also, we recommend the investigation of customer satisfaction for expanding the current knowledge and epistemology on airport networks in Latin America.

## References

- Dias, Murillo de Oliveira (2019d). Santos Dumont Airport: Civil Aviation in Rio de Janeiro, Brazil. In: Saudi Journal of Engineering and Technology, Vol.4, Issue 10, pp. 418-421 October/2019, ISSN 2415-6264. DOI: 10.36348/SJEAT.2019.v04i10.004
- Dias, Murillo de Oliveira (2019c). Air Passenger Transportation in Brazil. In: Global Scientific Journals. Vol 7, Issue 10, pp. 310-317, October/2019, ISSN: 2320-9186. DOI: 10.13140/RG.2.2.26800.71688
- Dias, Murillo de Oliveira (2019). Is it Worth Competing at the Bargaining Table? In: Global Scientific Journals. Vol 7, Issue 9, September/2019, pp. 1-14. ISSN: 2320-9186. DOI: 10.13140/RG.2.2.11557.45288
- Dias, Murillo de Oliveira; Albergarias, Raphael (2019). Role Play Simulation on Farm Debt: Brazilian Case. In: SSRG International Journal of Humanities and Social Science 6(4), 84-93., ISSN 2394 - 2703. DOI:10.112/gsj.2019.08.26384; DOI: 10.13140/RG.2.2.33770.88000
- Dias, Murillo de Oliveira (2019). Teaching Materials On Brazilian Dairy Producer Negotiation. In: Global Scientific Journals. Vol 7, Issue 8, August/2019, pp. 1052-1064. ISSN: 23209186; DOI: 10.13140/RG.2.2.36690.50881.
- Dias, Murillo de Oliveira; Albergarias, Raphael (2019). Teaching Materials: Role Play Simulation On Small Business Debt Collection In Brazil. In: International Journal of Management, Technology and Engineering. Vol. IX, Issue VIII, August/2019, pp.237-249, ISSN 2249-7455. DOI: 16.10089.IJMTE.2019.V9I8.19.29127.DOI: 10.13140/RG.2.2.36307.12329
- Dias, Murillo de Oliveira (2019). Teaching Materials: Role Play Simulation On Individual Business Debt Collection In Brazil. In: Global Scientific Journals (GSJ PUBLISHER). Vol 7, Issue 8, August/2019, pp. 844-859. ISSN: 2320-9186; DOI: 10.13140/RG.2.2.29406.18240. DOI: 10.11216/gsj.2019.08.26134
- Dias, Murillo de Oliveira (2019). New Structure on Cooperative Societies In Brazil: In: International Journal of Management, Technology and Engineering. Vol. IX, issue 8, pp. 202-214, August 2019. ISSN 2249-7455. DOI: 10.13140/RG.2.2.26122.82887. DOI:16.10089.IJMTE.2019.V9I8.19.29123
- Dias, Murillo de Oliveira; Ribeiro, Ana Paula; Albergarias, Raphael (2019). When customers do not pay: A Winning Negotiation Case in Brazil. In: Journal of Economics and Business. Vol 2, Issue 2, June, 2019, pp. 431-447; ISSN 2615-3726 (Online); ISSN 2621-5667 (Print). DOI 10.31014/aior.1992.02.02.99
- Dias, Murillo de Oliveira; Silva, Cleber A.; Lund, Myrian (2019) Brazilian Credit Cooperatives: Cresol Confederation Case. In: IOSR Journal of Business and Management (IOSR-JBM). ISSN: 2278-487X, Vol.21, Issue 5, May 2019, pp. 11-19. DOI: 10.13140/RG.2.2.30215.24487. DOI: 10.9790/487X-2105051119
- Dias, Murillo de Oliveira; Teles, Andre (2019). A Comprehensive Overview of Brazilian Legislation on Credit Cooperatives. In: Global Journal of Politics and Law Research, Vol. 7, Issue 4, May 2019, pp. 1-12; ISSN 2053-6593. DOI: 10.13140/RG.2.2.25054.28488
- Dias, Murillo de Oliveira (2018) Evolution of Cooperative Societies in Brazil. In: International Journal of Community and Cooperative Studies, Vol.6 No.4, pp.1-11, November 2018.ISSN 2057-262X. DOI: 10.6084/m9.figshare.7834688



- Dias, Murillo de Oliveira; Craveiro, F. M. (2019). Brazilian Agriculture Cooperative: Vinícola Aurora Case. In: International Journal of Management, Technology and Engineering. Vol. IX, issue 3, pp. 2551-2561, March 2019. ISSN 2249-7455. DOI: 16.10089/IJMTE. 2019.V9I3.19.27743. DOI: 10.13140/RG.2.2.19829.01763
- Dias, Murillo de Oliveira; Krein, Jeferson; Streh, Eder; Vilhena, João B. (2018) Agriculture Cooperatives in Brazil: Cotribá Case. In: International Journal of Management, Technology And Engineering, Volume 8, Issue XII, December/2018, ISSN: 2249-7455, pp. 2100-2110, DOI:16. 10089/IJMTE. 2018.V8I12.17.2243. DOI: 10.6084/m9.figshare.7834214
- Dias, Murillo de Oliveira; Ramos Alambert R. Murilo (2018). Credit Cooperatives in Brazil. In: International Journal of Science and Research (IJSR). Volume 7 Issue 10, October 2018, pp. 598-603. ISSN: 2319-7064. DOI: 10.21275/ART20191901.DOI: 10.6084/m9.figshare.7834661
- Dias, Murillo de Oliveira; Teles, Andre (2018). Agriculture Cooperatives in Brazil and the Importance for The Economic Development. In: International Journal of Business Research and Management (IJBRM), Volume (9) : Issue (2), December 2018, pp.72-81.DOI: 10.6084/m9.figshare.7832354
- Dias, Murillo de Oliveira; Teles, Andre (2019). A Comprehensive Overview of Brazilian Legislation on Credit Cooperatives. In: Global Journal of Politics and Law Research, Vol. 7, Issue 4, Mat 2019, pp. 1-12 -. ISSN 2053-6593. DOI: 10.13140/RG.2.2.25054.28488
- Dias, Murillo de Oliveira; Teles, Andre (2019b) Credit Co-Operatives In Brazil: Sicredi Case. In: International Journal of Advanced Research. Volume 7, Issue 4, April 2019, pp. 194-202; ISSN: 2320-5407. DOI: 10.21474/IJAR01/8806. DOI: 10.13140/RG.2.2.35306.16327
- Dias, Murillo et al. (2015). Brazilian Fashion Business Dudalina S/A: Case Revisited. In: International Journal of Business and Management Studies. ISSN: 2158-1479. Vol 04(01); p. 11-24. DOI: 10.6084/m9.figshare.7834730
- Dias, Murillo et al. (2014). Dudalina S/A: Case Study on How to Overcome Succession Barriers on a Brazilian Family Business. In: Business and Management Review, vol 3, no. 12, special issue Brazil, ISSN 2047-0398, pp. 217-229. DOI: 10.6084/m9.figshare.7834748
- Dias, Murillo et. al. (2014). FIAT and Chrysler in Brazil: Anatomy of an Alliance. In: International Journal of Business and Management Studies, vol.3(1), ISSN 2158-1479, pp 1-13. DOI: 10.6084/m9.figshare.7834739
- Dias, Murillo, Navarro, R.; Valle, A. (2013). BMW and Brazilian Federal Government: Enhancing the Automotive Industry Regulatory Environment. In: International Journal of Arts and Sciences, volume 06, number 02, pp.551-567. ISSN: 1944-6934. DOI: 10.6084/m9.figshare.7834742
- Dias, Murillo, and Teles, Andre (2019). Boeing, Brazilian Federal Government, And Embraer: Golden Share Veto And The Anatomy Of A Joint Venture. In: International Journal of Business and Management Studies, CD-ROM. ISSN: 2158-1479: 07(02):71-80 (2018). DOI: 10.13140/RG.2.2.14972.18563
- Dias, Murillo de Oliveira, and Falconi, Davi (2018), The Evolution of Craft Beer Industry in Brazil. In: Journal of Economics and Business, Vol.1, No.4, 618-626.ISSN 2615-3726.DOI: 10.31014/aior.1992.01.04.55
- Dias, Murillo de Oliveira (2018). Heineken Brewing Industry in Brazil. In: International Journal of Management, Technology and Engineering (IJAMTES) ISSN: 2249-7455. Volume 8 Issue 9, November/2018, Page No: 1304-1310. DOI:16.10089/IJMTE2156. DOI: 10.6084/m9.figshare.7834343
- Dias, Murillo de Oliveira & Davila Jr., E. (2018) Overcoming Succession Conflicts in a Limestone Family Business in Brazil. In: International Journal of Business and Management Review Vol.6, No.7, pp.58-73, August 2018. ISSN: 2052-6407. DOI: 10.6084/m9.figshare.7834703

- IATA (2019). Standards. Retrieved from <https://www.iata.org/pages/airports.aspx>, on October 8, 2019.
- IBGE (2019). Rio de Janeiro. Retrieved from <https://ibge.gov.br/>, on October 8, 2019.
- Infraero (2019). Santos Dumont. Retrieved from <http://www4.infraero.gov.br/imprensa/noticias/santos-dumont-volta-a-receber-voos-nestesabado-21-9>, on October 8, 2019.
- SDU (2019). Histórico. Retrieved from <https://www4.infraero.gov.br/aeroportos/aeroporto-dorio-de-janeiro-santos-dumont/sobre-o-aeroporto/historico/>, on October 8, 2019.
- Yin, R. (1988) Case Study Research: Design and Methods. Newbury Park, CA: Sage Publications.

