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Profitability And Future Viability of LGBI Airport Guwahati with Respect to Both Traffic and Non-Traffic Sources of Revenue

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Abstract:
Aviation business has a significant role to play in any nation's economy and had proven to be major contributor in GDP of any Nation across the world. Although the activities involved in Aviation are highly sensitive in nature and do not permit to have experiment or delayed decisions while in operations. On the other hand, revenue generation from Aviation to keep the operations floating remains a big challenging task for Aviation professionals. Here we are focussing on profitability of LGBI Airport Guwahati with respect to Traffic and Non traffic revenue sources. Profitability of any Airport depends on optimum utilization of resources available on Air side, within terminal and on city side as well. Further we know that due to Air traffic tariff being controlled as per Regulation from IATA, ICAO therefore there is not much scope of enhancing Air traffic revenue however the shortfall on Air traffic revenue can be compensated by Non Aero sources of revenue as there is no such regulations on Non Traffic revenue. Certain measures which may have direct impact on Non Aero revenue like minimising passengers queuing time, right flight gate allocations, making availability of more commercial space, subsequently increasing the dwell time through innovative methods for ease of passenger's convenience. The percentage share of Traffic VS Non traffic revenue at Indian Airports remain 25/75 ratio with the exception at Major Airports like DIAL, MIAL, BIAL and HIAL etc. where Non traffic revenue is nearing 30-35 percentage of total revenue. Here under this paper we will analyse the complete revenue generated at LGBI Airport w.r.t Traffic and Non traffic and will try to figure out that which are the factors most affecting the revenue growth and which are the factors affecting negatively and to be discarded.

Key Words: ICAO, IATA, GDP, Dwell time, Revenue, Traffic, Non traffic. ATM, ACI, GAU, LGBI, etc.

Introduction

According to the latest Airport Economics report by ACI, Airports Primary revenue traffic and non-traffic declined sharply across the Globe. Although non traffic revenue from cargo and other concessions kept the operations floating. Now after passage of COVID19 there is gradual increase in traffic subsequently non traffic revenue and coming closer to pre Covid 19 levels. Here the paper under study shall focus on Revenue of LGBI Airport Guwahati and try to analyse the profitability with respect to traffic and non-traffic revenue. LGBI (LOKPRIYA GOPINATH BORDOLOI INTERNATIONAL AIRPORT –IATA: GAU, ICAO: VEGT)) Guwahati is situated in North East part of India in the state of Assam. Guwahati being capital city and having large chunk of population among North Eastern States of India attracts more businesses hence traffic.

The business model say revenue model is a major factor to declare the profitability of an Airport whether operating under Single till approach or dual till approach or hybrid one. Here it is worth mentioning that the business model adopted has direct impact on the balance sheet. Under single till approach the cost incurred towards operational charges say Air side operations if found negative, the shortfall is countered with non-traffic revenue by maintain the operations and fulfilling the regulatory requirements under single till approach with single cost canter Whereas on the other side under double till approach the cost incurred on operations of Air side infrastructure and non-traffic side are kept under two different cost centre, therefore the traffic revenue remains the only source of income to develop the infrastructure as per standard and regulations. Here this may lead to safety issues and other regulatory observations as the Airport operator is at its liberty to utilise the non-traffic revenue for different purposes. Usually the practice across the globe is to adopt single till approach of utilising the whole income of Airport irrespective of traffic and non-traffic revenue for better revenue management. Further under hybrid till approach only 30% of non-traffic revenue is shared/ merged with traffic revenue which is also not

a healthy practice. Usually JV Airports do such kind of mixing to siphon off the non-traffic revenue for some other non-Aero activities.

The paper under study covers both traffic and non-traffic revenues of LGBI Airport Guwahati and analysis has been carried out to work out on the factors impacting the revenue. Traffic revenue mainly depends on ATMs and passengers count and remains directly proportional to each other. On the other hand, these both the variable i.e ATMs and passengers do directly impact the non-traffic revenue as well. Non traffic revenue streams like car parking, food and beverages, retails, and other space rentals shall be increasing with increase in ATMs and passengers. The key variable are User Development fee, Aircraft parking, passenger service charge, ground handling charges, CUTE charges, RNFC (Landing/take off), fuel charges, car parking, Airport entry, portages, retails and duty free, property/ space rentals, hotels, restaurants, lounges, land monetisation, advertising etc. All these services contribute towards the revenue generation. Further digital innovation also plays an important role towards maximising revenue by identifying and supporting through IT enables services.

Dynamic pricing of services may fetch more revenue like by keeping more charges towards parking in peak hours and low charges during lien hours, it will attract the car owners to remain parked even during lien hours and will pay revenue with reduced tariff. Under the study both traffic and non-traffic revenue of LGBI Airport have been analysed by using SPSS and factor analysis to find out the most significant and least significant source of revenue.

Review of Literature:

Sl.no.	Title of the paper and Journal Name.	Name of the Journal and year of Publication	Name of Author	Major findings	Conclusion and Scope.
1.	Airport Revenue diversification.(1)	Journal of Management science and Engineering Research.(Volume 02, issue 01, March 2019.	Hengsheng Gu, The University of Sydney, Australia	Airport Revenue management by using maximum advertising business, improve upon leasing policies, encourage transparency, and avoiding adhoc decisions, using IT enabled services to better manage revenue contracts, enhance market penetration.	Non Aeronautical revenue may play a major role in overall revenue generation of Airport revenue subject to adopting latest art of technological tools to minimize human intervention and by bringing transparency in contract management systems.
2.	Analysis of airport business Models.(2)	Case study of Europe.(Extended Abstract)	Diogo Filipe Bras dos Santos I MEC 2017/2018	Statistical analysis of business models of European Airports based on various parameters like passengers' foot fall, terminal facilities, Airside infrastructures, and non-traffic services. Analytical tools SPSS has been used to predict the effect/impact of various businesses and revenue streams.	The study suggests various business models may be adopted at Airports to enhance non traffic revenue to the tune of 50%..The physical dimension of Airport may certainly contribute to generate more revenue.
3.	The untapped potential of revenue Management in Airports.(3)	WIPRO Abstract.	(http://www.wipro.com/en/	The paper under study elaborates about pricing strategies for	Technology may play an important role in maximising

				effective revenue management of untapped potential of services like dynamic pricing models, developing theme bases arenas for visitors, land monetisation, land leasing etc. Also gathering of maximum data to improve upon the services.	Airport revenue by gathering the data to the maximum from all business activities and devise the programming to have IT enables services. Various non traffic services like Airport parking, Airport food and beverages, lounges, retails, advertising etc. Use of IT enables services may contribute towards maximisation of revenues.
4	STATE OF AIRPORT ECONOMICS(4)	ACI report 2014.	http://www.aci.aero/Publications/ACI-Airport-Statistics/ACI-Airport-Economics-Report-with-Excelindicator-tables)	ACI in its report have mentioned various technique of revenue models at various Airports across the Globe and given statistics of revenue shares of various verticals/ streams.	The report suggests on traffic revenue simultaneously role of PPP Airports on safety, security and other regulatory issues to be addressed by the Airport operators.
5.	The Impact of Low Cost Carriers on Non-Aeronautical Revenues in Airport: An Empirical Study of UK Airports.(5)	Journal of Air Transport Management, 64 (Part A). pp. 77-85. ISSN 0969-6997	Yokomi, M, Wheat, P orcid.org/0000-0003-0659-5052 and Mizutani	The report has stated various factors impacting revenues like LCC and ATMs. LCC pax. may consume more services and may contribute more towards non traffic revenues,	The study concludes the impact of LCC passengers contributions with the reason that LCC do not provide F&B services inside Aircraft , hence more time is spent in consuming various food items, also number of Air transport movements is also a major contributor.
6..	Indian Aviation sector as a growing services sector in Indian Economy.(6)	International journal of Science and research (IJSR)2014	Anuradha Yadav	Aviation is better managed and regulated sector among other services in India	Aviation industry has its foot print all over the world providing Air connectivity within the

					country as well as outside.
7.	Indian Civil Aviation Industry(7)	International journal of Multidisciplinary Research and Development 2017	Dr.N. Vijaykumar,Dr. C. Vijai	India has major share of traffic in domestic travellers being 5th fastest growing aviation market. Indian Aviation Industry is on rise and penetrating the semi urban and rural population.	The Govt. policies and program like NCAP 2016 on UDAN has really revolutionised the Aviation sector and has brought common man on board to travel by Air, India may become largest Air transport market in year 2030.
8.	Airlines size, profitability, Mergers and Regulations(8)	Journal of Airline law and commerce, 1973, volume 39, issue 2, Article 3.	Samuel R. Reid, James W Mohrfeld	The report states the pros and cons of merger of an Airlines to increase the size and profitability.	The variable component is quite low compared to fixed one i.e capital cost is more than the variables one. In such circumstances mergers of an Airline certainly give an edge to counter losses and managing the operational expenses.
9.	Sustainability of Airlines in India with Covid 19 challenges ahead and possible way outs(9)	Journal of Revenue and pricing Management 2020	Anshu Agrawall	Aviation industry suffered the most during Pandemic and expected to lose USD 84.3 billion in 2020 , the ever highest loss witnessed by Aviation sector.	Airlines need to adopt /innovate revenue strategy by focussing on minimizing losses rather than profit making.
10.	Aviation during and post pandemicCOVID19-Impactand strategies(10)	SF Journal of Aviation and Aeronautical Science,2020	Mehta P	Airports face new challenges to combat COVID -19 and adopt new norms of sanitizing, contact less check in, maintaining distances on seating inside Airport and within Aircraft, using robots, AI etc.	Fear among the traveller in general about their health has kept them back for boarding apart from cash crunch in the market. This perception has put the Aviation on back foot but slow and steady growth will certainly bounce back the sector.
11.	Financial distress in Indian Aviation Industry:	Eurasian Journal of Business and Economics, 2020	Samik shome, Sushma Verma	Except Indigo Airline all other Airlines VIZ Spice	The financial distress not necessarily

	Investigation Using Bankruptcy prediction Models(11)			Jet, Air India are not in healthy condition. Spice Jet is improving but JET Airways the premier Airline has drowned and remain suspended since April 2019.	Means bankruptcy, Airlines need to focus on identifying the variable critical in improving the financial performance.
12.	Travellers perceptions with reference to Indian Domestic Airlines (12)	International Journal of Recent Technology and Engineering(IJRTE),2019	Anupama Tadamala, Mallika Srivastav, Sandip Solanki	Airlines need to have introspection and create confidence among the travellers for their safe travel. Quick responsiveness, empathy, Service quality, tangibility , improvements in services by minimizing timings and better information systems through various digital platforms like SMS, mails etc.	Further analysis can be done on connections between Ticket pricing, service quality , customer loyalty, and duty performance ,etc.

RESEARCH METHODOLOGY:

The research design is exploratory in nature and quantitative. Three years' data on sources of income both traffic and non-traffic have been acquired from secondary sources of data. After sorting the data, it has been imported to SPSS software and linear regression has been performed on the data. The data on traffic sources of income yields satisfactory results. However, the data on non-traffic data has been subject to principal component analysis to ascertain the factors which have most impact on the profit of the airport.

Sources of data: Secondary. Traffic revenue data for the last 9-10 years and non-traffic revenue for last 8-10 years is used in study.

Tools used: Linear regression, Principal component analysis, Factor analysis.

Software used: SPSS

ANALYSIS:

Regression - Coefficients - February 13, 2022

Coefficients[a] Coefficients, table, 2 levels of column headers and 2 levels of row headers, table with 14 columns and 14 rows													
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-57791797.436	5976021.317		-9.671	.000	-69671734.630	-45911860.242					
	Landing Charges	2.283	.766	.521	2.978	.004	.759	3.806	.868	.306	.084	.026	38.712
	Parking Charges	-4.316	2.028	-.074	-2.128	.036	-8.347	-.284	-.272	-.224	-.060	.648	1.544
	RNFC Charges	-.512	1.177	-.076	-.435	.665	-2.852	1.828	.837	-.047	-.012	.026	38.413
	Aviation_Safety Charges	1.028	.142	.260	7.216	.000	.744	1.311	.600	.614	.203	.608	1.645
	UDF Charges	.328	.140	.248	2.336	.022	.049	.607	.823	.244	.066	.070	14.254

	PSF_Facilitation Charges	.092	1.353	.005	.068	.946	-2.597	2.782	-.356	.007	.002	.150	6.660
	Watch_Extension Charges	1.026	3.253	.009	.316	.753	-5.440	7.492	-.038	.034	.009	.903	1.108
	Counter Charges	-5.435	33.178	-.008	-.164	.870	-71.391	60.521	-.337	-.018	-.005	.322	3.103
	NASFT Charges	1.403	.130	.345	10.749	.000	1.143	1.662	.472	.757	.302	.768	1.302
a. Dependent Variable: Profit													

As evident from above table, RNFC charges, PSF facilitation charges, Watch extension charges and Counter charges do not have significant influence on the profitability.
Other variables are significant although, Parking charges have a negative impact on profitability. The Beta values of the independent variables indicate that for one unit changes in their value, the dependent variables changes by the amount of the coefficients. However, a negative sign indicates the movement is in the opposite direction of the independent variable.

Non-Traffic Data Analysis
Profit generation at an Airport by non-traffic components is analysed by taking previous five (05) years of data and performed factor analysis and then linear regression to understand the fact that which component impacts positively towards generation of profit and which component impacts negatively.

Tools used: Linear regression, Principal component analysis, Factor analysis.
Software used: SPSS
Details of revenue earned from various non-traffic components, expenditure incurred and profit from non-traffic components

Dependent
There were a total of twenty-one components on which factor analysis was done based upon the total revenue earned from different components and it's affect on profit share from Non-traffic data.

Factor Analysis

Rotated Component Matrix[a]

	Component 1	2	3	4	5
F_B	.163	.045	.128	-.975	.070
Retail	-.056	.962	.044	.259	-.057
Restaurabt	-.303	.951	-.029	-.042	.027
Car_Parking	.581	.337	.435	.599	.015
Advertisement	.594	.561	.288	.488	.106
Space_Rental	.932	.288	.129	-.161	.081
In_Flight_Kitchen	.318	.368	.828	-.019	-.278
Money_Exchange	.100	.692	.507	.477	.162
Vending_Machine	.909	.231	.291	.108	.154
Airport_Entry_Ticket	.806	-.449	.152	.171	.312
ATM	.599	.751	.122	-.158	.194
Executive_Lounges	.931	-.001	.290	.194	-.111
Hotel_Reservation_Counter	.896	-.156	.381	.119	.113
Car_Rental	.789	-.408	-.218	-.024	-.404
Prepaid_Taxi	.343	-.018	.881	.105	.308
IBS	.512	.675	.311	.414	-.125
DTO	.093	.931	.260	-.010	-.240
Trolley_Ret	.684	-.635	.353	.066	.012
GSE	.118	-.082	.020	-.098	.985
SPA	.605	.156	.419	.659	-.009
In_Flight_Monetizzation	.500	.234	.498	.616	-.260

Extraction Method: Principal Component Analysis.

Extraction method : Principal Component analysis was used to extract factors in order to identify the affect of these components on profit share.

Therefore these factors were identified and clubbed together to carry out Linear regression.

Linear Regression Result

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.000	.072		-.006	.995					
	FBretailrestaurant	.723	.000	1.257	196881892.2	.000	.826	1.000	.547	.189	5.285
	vendingmachineairportenterticket	-38.233	.000	-1.490	-144474067	.000	-.446	-1.000	-.401	.072	13.799
	moneyexchangetam	11.378	.000	.356	64447145.07	.000	.788	1.000	.179	.253	3.947
	carrentalprepaidtaxidto	13.555	.000	.532	93929184.11	.000	-.095	1.000	.261	.241	4.155
	Hostelreservationcounterstrolleyretrieval	78.086	.000	1.560	129801142.6	.000	-.598	1.000	.360	.053	18.731

a. Dependent Variable: Profit

Interpretation:

1. Factor Analysis was done on all the twenty-one (21) parameters which contribute towards non-traffic profit of an Airport.
2. Factor Analysis resulted in giving five(05) components which majorly contribute towards non-traffic profit (either positively or negatively).
3. Further, these factors/ parameters were identified (individually or combined) and Linear regression was performed.
4. After carrying out Linear Regression on these five(05) parameters, a model is developed by SPSS software which clearly indicated the significant values are within the range.

Results of non-traffic data:

Principal components/correlation Number of obs = 60
Number of comp. = 5
Trace = 21
Rotation: (unrotated = principal) Rho = 1.0000

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	10.341	4.715	0.492	0.492
Comp2	5.626	3.419	0.268	0.760
Comp3	2.207	0.563	0.105	0.866
Comp4	1.644	0.462	0.078	0.944
Comp5	1.181	1.181	0.056	1.000
Comp6	0.000	0.000	0.000	1.000
Comp7	0.000	0.000	0.000	1.000
Comp8	0.000	0.000	0.000	1.000
Comp9	0.000	0.000	0.000	1.000
Comp10	0.000	0.000	0.000	1.000
Comp11	0.000	0.000	0.000	1.000
Comp12	0.000	0.000	0.000	1.000
Comp13	0.000	0.000	0.000	1.000
Comp14	0.000	0.000	0.000	1.000
Comp15	0.000	0.000	0.000	1.000
Comp16	0.000	0.000	0.000	1.000
Comp17	0.000	0.000	0.000	1.000
Comp18	0	0	0.000	1.000
Comp19	0	0	0.000	1.000
Comp20	0	0	0.000	1.000
Comp21	0	.	0.000	1.000

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Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Unexplained
fb	-0.038	-0.061	0.612	-0.108	0.315	0
retail	0.124	0.379	0.010	-0.047	-0.157	0
restaurant	0.025	0.406	0.158	-0.003	-0.085	0
carparking	0.295	0.040	-0.189	0.071	-0.050	0
advertisem~t	0.291	0.110	-0.054	0.059	-0.194	0
spacerental	0.251	-0.088	0.330	-0.150	-0.160	0
inflightki~n	0.228	0.090	0.047	-0.074	0.583	0
moneyexcha~e	0.220	0.256	-0.108	0.243	0.064	0
vendingmac~e	0.290	-0.092	0.170	-0.007	-0.125	0
airportent~t	0.179	-0.326	0.024	0.146	-0.168	0
atm	0.224	0.145	0.382	-0.039	-0.186	0
executivel~s	0.277	-0.169	0.021	-0.164	-0.039	0
hotelrerva~r	0.259	-0.229	0.074	0.020	0.015	0
carrental	0.104	-0.296	-0.002	-0.469	-0.172	0
prepaidtaxi	0.215	-0.071	0.033	0.383	0.458	0
ibs	0.278	0.173	-0.056	-0.096	-0.080	0
dto	0.158	0.334	0.138	-0.187	0.110	0
trolleyret~l	0.147	-0.362	-0.046	0.014	0.167	0
gse	0.017	-0.092	0.278	0.647	-0.277	0
spa	0.285	-0.028	-0.259	0.068	-0.052	0
inflightmo~n	0.274	0.029	-0.296	-0.075	0.114	0

Interpretation:

1. Th negative values in the principal component variable indicates that these component affect negatively to the profit earned during the Financial year.

The negative impact (Comp1) can be termed as

Bartlett test of sphericity

Chi-square = 12200.096

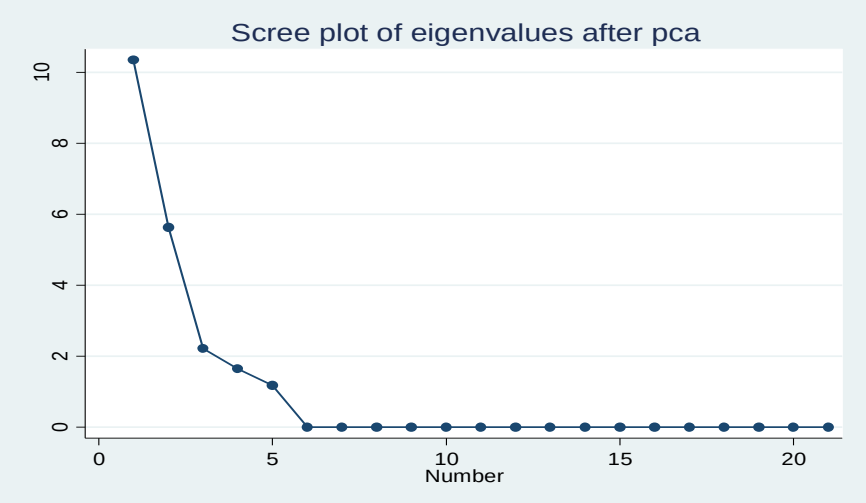
Degrees of freedom = 210

p-value = 0.000

H0: variables are not intercorrelated

Kaiser-Meyer-Olkin Measure of Sampling Adequacy

KMO = 0.806



As per the scree plot, the elbow point suggests that the first three components determine the maximum influence of the non-traffic variables.

Conclusion:

It is evident from Analysis i.r.o traffic (Aeronautical) as well as non-traffic (non aeronautical) components adding to overall revenue generation, the variables affecting the revenue negatively as well as positively impacting the revenue have been identified using factor analysis. Based on the findings the overall revenue can be maximised by controlling the variables identified. By controlling the variables significant change in revenue can be achieved**.**

References

1. Hengsheng Gu, The University of Sydney, Australia- **Airport Revenue Diversification** Journal of Management science and Engineering Research. (Volume 02, issue 01, March 2019
2. Diogo Filipe Bras dos Santos I MEC 2017/2018 **Analysis of airport business Models Case study of Europe.** (Extended Abstract
3. http://www.wipro.com/en/ **The untapped potential of revenue Management in Airports WIPRO** Abstract.
4. http://www.aci.aero/Publications/ACI-Airport-Statistics/ACI-Airport-Economics-Report-with-Excelindicator-tables) **STATE OF AIRPORT ECONOMICSACI** report 2014.
5. Yokomi, M, Wheat, P orcid.org/0000-0003-0659-5052 and Mizutani **the Impact of Low Cost Carriers on Non-Aeronautical Revenues in Airport: An Empirical Study of UK Airports Journal of Air Transport Management**, 64 (Part A). pp. 77-85. ISSN 0969-6997
6. Anuradha Yadav **Indian Aviation sector as a growing services sector in Indian Economy** International journal of Science and research (IJSR)2014
7. Dr.N. Vijay Kumar, Dr. C. Vijai **Indian Civil Aviation Industry** International journal of Multidisciplinary Research and Development 2017
8. Samuel Reid, James W Mohrfeld Airlines size, **profitability, Mergers and Regulations** Journal of Airline law and commerce, 1973, volume 39, issue 2, Article 3
9. Anshu Agrawall **Sustainability of Airlines in India with Covid 19 challenges ahead and possible way outs** Journal of Revenue and pricing Management 2020
10. Mehta P **Aviation during and post pandemicCOVID19-Impactand strategies** SF Journal of Aviation and Aeronautical Science,2020,
11. Sushma Verma, Samik shome **Financial distress in Indian Aviation Industry: Investigation Using Bankruptcy prediction Models** Eurasian Journal of Business and Economics, 2020
12. Anupama, Tadamala, Mallika Srivastav, Sandip Solanki **Travellers perceptions with reference to Indian Domestic Airlines International** Journal of Recent Technology and Engineering(IJRTE),2019