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The impact of debt and equity decisions on business performance: Evidence from International Airline Corporation

تأثير قرارات الديون وحقوق الملكية على أداء الأعمال: دليل من شركة الطيران الدولية

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Written by:
Qaiser Aman[1]
https://orcid.org/0000-0003-4358-7940
Sultan Altass[2]
https://orcid.org/0000-0003-3733-7400

Abstract

Capital structure decision remains always interesting puzzle for practitioner as well as for researchers. Capital structure of company fluctuates from company to company, country to country, nature of business to business and firm age to age. The current study examines the impact of capital structure (financial leverage and equity decision) on airline performance. The analysis is performed on secondary data. Data is taken from the financial statements of under consideration study of Pakistan International Airline. Sample period is taken from 2004 to 2020. The financial performance is measured by ROA and ROE, while independent variables are debt to asset (DTA), debt to equity (DTE), and size (natural log of total assets). Two econometric models are developed for the analysis. Regression and correlation are used to measure the impact of debt and equity on company performance. The study demonstrated that DTA has a statistically significant negative relationship with the dependent variable, ROA. Model 1 results indicated that only DTA was the good predictor of ROA and size had no significant relationship with ROA. Model 2 results demonstrated that the size had a significant but positive relationship with ROE. Meanwhile, DTA had an insignificant association with ROE.

Keywords: Financial Performance, Debt, Equity, Return on assets, Return on equity, Airline Company.

خلاصة

يظل قرار هيكل رأس المال دائمًا لغزًا مثيرًا للاهتمام للممارس وكذلك للباحثين. يتقلب هيكل رأس مال الشركة من شركة إلى أخرى ، ومن بلد إلى آخر ، وطبيعة الأعمال التجارية إلى الأعمال التجارية ومن شركة إلى أخرى. تبحث الدراسة الحالية في تأثير هيكل رأس المال (الرافعة المالية وقرار الأسهم) على أداء شركات الطيران. يتم إجراء التحليل على البيانات الثانوية. البيانات مأخوذة من البيانات المالية للدراسة قيد النظر لشركة الخطوط الجوية الباكستانية الدولية. يتم أخذ عينة الفترة من 2004 إلى 2020. ويقاس الأداء المالي حسب العائد على الأصول والعائد على حقوق الملكية ، في حين أن المتغيرات المستقلة هي الدين إلى الأصول (DTA)، والديون إلى حقوق الملكية (DTE) ، والحجم (السجل الطبيعي لإجمالي الأصول). تم تطوير نموذجين اقتصاديين قياسيين للتحليل. يتم استخدام الانحدار والارتباط لقياس تأثير الديون وحقوق الملكية على أداء الشركة. أظهرت الدراسة أن DTAلها علاقة سلبية ذات دلالة إحصائية مع المتغير التابع ROA.أشارت نتائج النموذج واحد إلى أن DTA فقط كان مؤشرًا جيدًا على العائد على الأصول وأن الحجم ليس له علاقة كبيرة مع ROA.أظهرت نتائج النموذج ثانية أن الحجم كان له علاقة مهمة ولكن إيجابية مع ROE. وفي الوقت نفسه ، كان لـ DTA ارتباط ضئيل معROE .

لكلمات المفتاحية: الأداء المالي ، الديون ، حقوق الملكية ، العائد على الأصول ، العائد على حقوق الملكية ، شركة الطيران

Introduction

Pakistan International Airline (PIA) was established on 29th October 1946 with the name of Orient Airways. It was originally based in Calcutta, British India, before partition. After

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[1] Qaiser Aman, Ph. D, Associate Professor, Department of Accounting, College of Business, King Abdulaziz University, Jeddah, Rabigh Campus, Saudi Arabia.
[2] Dr. Sultan Altass, Head of Accounting Department, College of Business, King Abdulaziz University, Jeddah, Rabigh Campus, Saudi Arabia.

partition, Pakistan International Airline Corporation (PIAC) took control of Orient Airways (See Appendices A). It started its international operation in 1955 to London via Cairo and Rome. One of the key performance indicator of an airline is employees-to-Fleet Ratio (See Appendices B). It is a nonfinancial indicator of airline. It explains the size of fleet with respect to number of employees. The Syrian Arab Airlines has the worst employees-to-fleet ratio, followed by PIA and Thai Airways. Garuda Indonesia has a good employees-to-fleet ratio. Meanwhile, Turkish Airlines has very strong position with respect to the size of fleet and has second good employees-to-fleet ratio. Egypt Air has third good employees-to-fleet ratio (Shah, 2016)

Financial information always plays a vital role in businesses' success, competition, growth, and the brand name of the company. A good accounting information system helps a lot in designing, maintaining, and generating needed and specific reports. Small to large and all kinds of businesses need proper accounting records in order to evaluate their progress. A sound and reliable accounting/finance section is indispensable for business development generally and particularly for corporations. In time, free from errors, verified, complete, and fair financial information about business activities assists a company in making good decisions. Proper records and organized information are equally important for businesses of all sizes and of any nature. Small size businesses require less financial and nonfinancial resources in comparison with medium and large size businesses. Companies' cross-functional decisions are very crucial. In fact, all decisions are important such as marketing, human resource, research and development, operational/production, and financial ones (Frank & Goyal, 2003). Financing requires fundamental and major decisions. Capital structure of a company is comprised of debt and long-term capital. It is utilized by a company in order to acquire the needed assets or to fill the gap of required capital (Damodaran, 2001). Both debt and equity are ultimately claimed by the investor over the assets of a company. It is crucial to use them in a proper way. Use them in productive assets so that the company generates sufficient revenues (Riahi-Belkaoui, 1999).

It is worth mentioning that financial decisions need particular attention and care. Financial decisions influence all the activities and functions of a company. Every financial decision needs proper analysis. Two basic dimensions always have to be considered in making a financial decision in the form of the costs and benefits of financing. Debt and equity decision in a company needs great care and attention. Technical analysis is needed with respect to value addition in a long run (Ardalan, 2018). Fundamental analysis helps company management to make debt and equity decisions. Numerous factors affect such decisions, including investor relations, interest rates, and conditions of a business, capacity, growth, and length of credit, dividends, earnings per share, market conditions, internal strengths, external opportunities, liquidity position, and previous earnings (Campbell & Rogers, 2018). Long-term debt and equity relate to the capital structure of a company. Top-level management is responsible for capital structure decisions. Technical analysis (ratio analysis) plays a crucial role in a firm's capital structure. It has been noted that no company is self-sufficient in terms of financial resources. Based on the corporate culture, capital structure decisions need to require a knowledge of the level of competition, market opportunities, business conditions, interest rates, and previous dividend payouts. There is no ideal figure for the capital structure of a company. It depends upon the nature, size, condition, growth, interest rates, and the past and current performance of a company. Due to the prevailing condition and the market mechanism, corporate culture has become popular. Economies worldwide promote corporate culture. Such a culture plays a significant role in those countries and is equally important for investors and for the economy in general. Different regions of the world also affect the capital structure decisions of a company differently. Institutionalized systems, quality of life, financial literacy, transparency, and quality of law also matter in capital structure decisions (Butzbach & Sarno, 2019).

Financial experts have indicated different capital structure theories since the 1950s. They have also tried to explain the effect value of the firm and capital structure on stock returns. In short, many studies have been conducted and published on this field. No one has claimed to have determined the ideal or more suitable capital structure for companies. There is no scientific rule and no agreement over the optimal level of debt and equity. Various researchers highlighted different factors for evaluating the capital structure of a firm. In particular, two key philosophies (trade-off theory and pecking order theory) explain the factors that affect the capital structure of a company. Theory of trade-off claims that there is an optimal capital setup for companies through

determining the most suitable debt ratio (Jalilvand & Harris, 1984; Frank & Goyal, 2007).

(Modigliani & Miller, 1958) have suggested that capital structure theories operate under perfect market condition. Expectations of perfect capital market conditions relating to homogenous opportunities, investors, tax holidays, no transaction costs, and efficient market and capital structures are inappropriate when it comes to shaping businesses' worth. However, the capital structure proposition of Modigliani and Miller (MM) is well known as the "theory of irrelevance" of capital structure and discloses that capital structure is independent of business performance. Both new and existing businesses need an appropriate amount of capital to run the business properly. Without sufficient financial resources, a business's performance comes under pressure and the company cannot meet the expectations of investors nor that of the company's management (Ghosh et al., 2000).

Problem Statement

International business, especially the tourism and hospitality business is in full swing. Due to globalization, the boundaries of businesses have been extended, and isolation has become a dream. Tourism and hospitality are being promoted by every country. This sector has become a revenue-generating sector. The airline industry is a prerequisite for developing the tourism and hospitality sector. The airline industry requires a huge amount of funds in order to operate the business. Almost all countries worldwide have their own airline company. Consequently, it has become a very large industry globally, and capital structure decisions has a tremendous importance for airline companies. The current study analyzes the effect of financial leverage and equity decisions on airline performance.

Review of the Literature

There is no doubt that every decision has some costs and benefits. Debt has its own benefits and costs, while equity has different ones. Both are significantly affected by other factors; financial leverage and capital also affect the financial performance of a company (Miguel & Pindado, 2001). According to (Gaud et al., 2005) that the combination of long-term debt and equity of a firm impacts the business performance differently, as compared to (Flannery & Rangan, 2006) and (Gonzalez & Gonzalez, 2008). (Myers & Majluf, 1984) and (Fama & French, 2002) reported that market information and trends affect a company's capital structure decisions. Usually, internal financing is more suitable than external financing for companies. Internal financing depends upon the generation of revenue and sufficient availability of funds. In short, companies prefer debt due to the unavailability of internal funds. Therefore, the pecking-order theory stance does not claim to encourage the presence of an ideal liability ratio. It considers investor behavior, corporation tax, and principal and agent relations (Frank & Goyal, 2009).

Asgharian (2003) examined the relationship between highly debt firms and firm performance. The study findings showed that more debt leads to less sales growth and less stock return. Whereas, still highly debt firm shows greater progress in profitability. The study suggested that decline in sales of highly financial leveraged firms might be a question of management performance.

Aman & Altass (2019) analyzed the impact of capital structure and its impact on business performance over the period of 1990 to 2015 of an airline industry. They reported no significant effect of debt to assets with respect to business performance. While the results showed positive and significant impact of debt to equity on business performance of Airline Company. Nenu et al., (2018) examined the leverage on risk and performance of company. They collected data from registered firms on the Bucharest Stock Exchange. Their results demonstrated that leverage is positively correlated with the size of firm. Leverage also influences the market price of share. (Mallinguh et al., 2020) analyzed the situation with respect to age, business sector, and firm performance in terms of the mediating role of financial leverage and foreign ownership. Results indicated that debt has a significant effect on firm's performance. They investigated 146 enterprises in which leverage was found to be a significant contributor to firm's performance. They also found insignificant relation of foreign ownership with firm's performance. However, Mallinguh et al., (2020) explained that the internal ownership of a firm perceives that the availability of debt impacts the company's performance. Some financial scientists claim that leverage does not influence business performance. Debt harms firms when their conditions, growth, and performance are not up to the required standard. Although some of the literature warns against high leverage levels, high leverage actually depends upon specific businesses that need high liquidity for their

processes. In short, insufficient internal funds lead to the use of external funds.

Warokka, Jose & Abdullah (2011) analyzed the capital structure and firm financial performance of 532 East Asian companies in term of post Asian Financial Crises. Their findings predicted significant association with debt and firm performance. While study depicted inverse relationship between ownership structure and firm performance. On the other hand Margaritis & Psillaki (2007) investigated the association between debt and firm efficiency. Their research questions were "Does higher leverage lead to better firm performance? And Does efficiency exert a significant effect on leverage over and above that of traditional financial measures of capital structure? What is the signaling role of efficiency to creditors or investors? Is the effect of efficiency on leverage similar across different capital structures? Their results demonstrated that efficiency declines as debt increases. While leverage has positive effect on profitability.

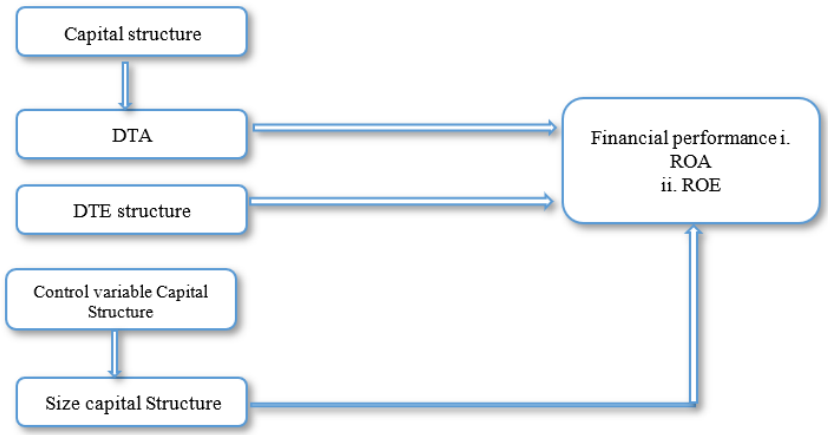
This controversial dialog has allowed different researchers to explain the attributes of various variables with respect to company and country profiles. It is a universal truth that every company and country have their own characteristics and environment, law and order, corporate laws, institutional frameworks, targets, international relations, economic situation, investors trust, and so on. Former researchers have pointed out that a company's financial arrangement is not affected by firm-specific variables. At the same time, country-specific environment impacts the financial structure of a company (Booth et al., 2001; Bancel & Mittoo 2004). Despite this, the firm particular dynamics and country-specific factors are equally important, and both influence the firm's financial leverage decisions (De Jong et al., 2008).

Usually businesses use debt for tax shield purposes. This way, a firm's value can be enhanced due to debt financing (Jensen, 1986). (Hadlock & James, 2002) also reported the same findings. On the other hand, some researchers have pointed out an adverse relationship between debt and the financial performance of a firm (Fama & French, 2002; Simerly & Li, 2000), while (Zeitun & Tian, 2007) supported the argument that financial performance depends upon a balanced capital structure.

Methodology

A study database was designed through the use of the standardized financial statements of the company. Data were collected from the company's annual reports. PIA was taken as a case to find the debt and equity impact over the period from 2004 to 2020. The first step was to download the financial reports from the given website (https://www.piac.com.pk/corporate/). The second step was to arrange and organize the data in an Excel sheet. The third step was to calculate necessary ratios for dependent and explanatory variables. The fourth step was to export organized information to SPSS software for further analysis.

Theoretical Framework:



Grafic 1. Research Study Model
Source: Researchers' developed 2023

Hypotheses of the Study

H1: It is predicted that DTA and firm performance have negative relation.

H2: The DTE has a positive relationship with business performance.

H3: The size of the firm and business performance have positive relationship.

Variables Construction and Concepts

Business performance of airline is measured by ROA and ROE ratio. The explanatory variables are measured through DTE and DTA, while the size of the company is measured through total assets of the company.

Dependent Variables

Financial performance is reflected to be a key indicator of corporate achievement. Investors and management are greatly concerned with firms' performance. Investors motivate and make investment decisions through the consideration of the financial soundness of the company. Meanwhile, management performance is checked through business achievement and financial performance of the company. Many dimensions of a firm linked with the firm's performance. Two quantitative financial parameters are taken as the dependent variables ROA and ROE.

Return on Assets

ROA or investment measures the efficiency and utilization of total assets and is considered to be a key performance indicator. It measures the cash inflows generated by the total assets of a firm.

Return on Assets = Net Profit / Total Assets

Return on Equity

ROE is also a good performance indicator. It measures the return on stockholders' equity. A high ROE increases the trust of stockholders and increases the likelihood of success if an issue regarding raising capital occurs in the future. It also portrays the good image of company in the market. A good market image ultimately increases the market price per share.

Return on Equity = Net Income / Shareholders' Equity

Independent Variables

Debt and equity decision becomes indispensable for companies. The current study utilized three independent variables in the form of DTA ratio, DTE ratio, and the total assets of the firm.

Debt to Assets

DTA measures how many assets are financed through debt of a company. Alternatively, it denotes the percentage of debt in assets. A high ratio indicates risk and reduces the net profit of the firm.
Debt to Assets = Total Debt / Total Assets

Debt to Equity

DTE is another explanatory variable which is utilized for measuring a company's financial leverage. Such ratio indicates the use of debt in comparison with equity when company makes investment.
Debt to Equity = Total Liabilities / Total equity

Size of the Firm

Total investment of the firm is measured through the total assets of the company. This study has taken the natural log of the total assets and regressed to firm performance.
Size = LNTA (Natural logarithm of total assets)

Data Examination

The trends of data are examined through descriptive analysis. Meanwhile, correlation and multiple regression are utilized for investigating the impact of debt and equity on business performance. More precisely, the relationship of debt to asset is considered with respect to a firm's performance. DTE is regressed to ROA and ROE to find the relationships and identify how much change occurs in the dependent variable when one-percent change occurs in independent variables. How debt and equity affect the firm's performance is also considered. Data analysis also checks the association, direction, and strengths of associations between independent and dependent variables. The following models are constructed based on in-depth review of the literature:

$$Yit = \alpha + \beta_{1it} DTA + \beta_{2it} DTE + \beta_{3it} Size + \varepsilon \quad (1)$$

Where,

Yit is the return on assets,
A is the coefficient of intercept,
DTA is the debt to asset,
DTE is the debt to equity,
Size is the natural log of the total assets,
E (ε) is the error term.

$$Yit = \alpha + \beta_{1it} DA + \beta_{2it} DE + \beta_{3it} Size + \varepsilon \quad (2)$$

Where,

Yit is the return on equity,
A is the coefficient of intercept,

DTA is the debt to asset,
DTE is the debt to equity,
Size is the natural log of the total assets,
E (ε) is the error term.

Analysis and Results of Model 1.

To draw a conclusion, the following tests results and statistics are presented below:

Table I.
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. deviation
ROA	17	-8.9037	40.0209	2.7995	11.2677815
ROE	17	-23.1751	73.1792	4.2010	20.0532246
DTA	17	22.7604	61.5809	3.5247	9.2527943
DTE	17	29.4673	160.2873	5.8464	30.6756934
Size	17	20.4867	21.6413	2.1113	.3530912

Source: Researchers' calculated 2022

Table II.
Correlations

		ROA	DTA	DTE	Size
ROA	Pearson correlation	1			
	Sig. (2-tailed)				
DTA	Pearson correlation	-.604*	1		
	Sig. (2-tailed)	.010			
DTE	Pearson correlation	-.723**	.977**	1	
	Sig. (2-tailed)	.001	.000		
Size	Pearson correlation	-.605*	.276	.327	1
	Sig. (2-tailed)	.010	.283	.200	

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).
Source: Researchers' calculated 2022

The above explains the relationship, direction, and association strengths between the variables. Almost all the variables have significant relationship with each other. However, DTE is highly correlated with DTA and ROA. This indicates that there is a problem of multicollinearity resulting in spurious results.

Consequently, the study removed the DTE variable from the model and tested the correlation again. After removal of the DTE variable, the correlation between the variables comes within the normal range.

Table III.
Correlations

		ROA	DTA	DTE	Size
ROA	Pearson correlation	1			
	Sig. (2-tailed)				
DTA	Pearson correlation	-.559*	1		
	Sig. (2-tailed)	.020			
Size	Pearson correlation	-.401	.220	-.267	1
	Sig. (2-tailed)	.111	.396	.300	

Correlation is significant at the 0.05 level (2-tailed).
Source: Researchers' calculated 2022

Table IV.
Model Summaryb

R	R square	Adjusted R square	Std. error of the estimate	Durbin-Watson
.644[a]	.414	.279	8.83827	1.949

a. Predictors: (Constant), DTA, size. b. Dependent variable: ROA.
b. Source: Researchers' calculated 2022

Table V.
ANOVAb

Model 1	Sum of squares	df	Mean square	F	Sig.
Regression	718.550	3	239.517	3.066	.066[a]
Residual	1015.494	13	78.115		
Total	1734.044	16			

a. Predictors: (Constant), size, DTA. b. Dependent variable: ROAs.
Source: Researchers' calculated 2022

Overall regression model goodness-of-fit is observed, and the results were shown to be unbiased, and the sample is normally distributed.

Table VI.
Coefficients

Model 1	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
(Constant)	182.232	166.518		1.094	.294
DTA	-.041	.019	-.470	-2.133	.053
Size	-10.261	8.947	-.256	-1.147	.272

a. Dependent variable: ROA.
Source: Researchers' calculated 2022

The results of table explain that DTA has a significant negative relationship with ROA. It indicates that DTA has a negative impact on ROA. The results demonstrate that the increase in DTA leads to a reduction in ROA of the company and vice versa. On the other hand, firm's size has no significant association with the dependent variable. The results show that only DTA is a predictor of ROA.

Research Model 2 Results

Table VII.
Correlations

		ROE	DTA	DTE	Size
RTE	Pearson correlation	1			
	Sig. (2-tailed)				
DTA	Pearson correlation	.078	1		
	Sig. (2-tailed)	.767			
DTE	Pearson correlation	-.951**	-.211	1	
	Sig. (2-tailed)	.000	.415		
Size	Pearson correlation	.096	.220	-.267	1
	Sig. (2-tailed)	.713	.396	.300	

**Correlation is significant at the 0.01 level (2-tailed).
Source: Researchers' calculated 2022

The study found the same multicollinearity problem with debt to equity in the second model. To avoid the misleading statistical evidence the study removed DTE from the model and then performed correlation analysis given below.

Table VIII.
Correlations

		ROE	DTA	Size
ROE	Pearson correlation	1		
	Sig. (2-tailed)			
DTA	Pearson correlation	.078	1	
	Sig. (2-tailed)	.767		
Size	Pearson correlation	.096	.220	1
	Sig. (2-tailed)	.713	.396	

Source: Researchers' calculated 2022

Table IX.
Model Summaryb

Model 2	R	R square	Adjusted R square	Std. error of the estimate	Durbin-Watson
	.970[a]	.942	.928	17.28118	2.413

a. Predictors: (Constant), size, and DTA. b. Dependent variable: ROE
Source: Researchers' calculated 2022

Table X.
ANOVA[b]

Model 2	Sum of squares	df	Mean square	F	Sig.
Regression	62565.277	3	20855.092	69.834	.000[a]
Residual	3882.309	13	298.639		
Total	66447.586	16			

Table XI.
Coefficients

Model 2	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
(Constant)	719.064	325.588		2.209	.046
DTA	-.056	.038	-.103	-1.485	.161
Size	37.507	17.494	.151	2.144	.052

a. Dependent variable: ROE.
Source: Researchers' calculated 2022

The above results demonstrate that DTA has no association with the dependent variable. Size also has a positive impact on firm performance. Results show that size is a predictor of ROE.

Conclusions

In order to reach sound conclusions, the current study developed two econometric models in order to analyze debt and equity decisions with respect to company's financial performance. The financial management of the airline industry is not an easy task. It is a capital-intensive industry, and its financial decisions have critical importance, especially with regard to the use of debt and equity decisions. Higher levels of debt make a firm riskier and vice versa. The advantages and disadvantages of debt and equity must be taken into account when making appropriate capital structure decisions.

PIA uses more debt in comparison with equity, even though the interest rates are high in Pakistan. The results of the first model found that only DTA plays a significant role in terms of financial performance, whereas size does not have a substantial effect with respect to capital structure. DTA was found to have negative relationship with ROA, but PIA is using more debt. This is the reason that company is going into loss. Having financial distress is why a company uses debt to operate. In fact, when company takes more debt, it can give greater returns to creditors in the form of interest expenses. The second model investigated the possibility that size plays a significant role in firm's performance. The company has sufficient total assets and can utilize them in a productive way. Efficient and effective use of total assets creates value addition to the firm, and such value addition is needed by PIA. It is essential to make

the assets productive and reduce the use of nonproductive assets. In fact, nonproductive assets have a liability over the company to pay insurance, maintenance expenses, etc. There is no doubt that the airline company is extremely capital intensive and is often considered to have a high debt-to-equity ratio. Therefore, substantial amounts of capital are required to buy planes, heavy tools to support them, major fuel charges which depend upon market price, air hangars, flight simulators, maintenance to airplanes, flyers, trip attendants, luggage handlers, and catering cost. A major problem of PIA is overstaffing. It has just 28 airplanes with very low number of destinations, just 45. Approximately 10500 employees are working in PIAC which is too much as compared to its fleet. Employees-to-fleet ratio 375/aircraft which is very high. It shows worst staff-to-plane ratio in the airline industry after Syrian airline. It is a weak indicator of airline. It is highly recommended to reduce the number of employees.

PIA is a national flag airline, and company would take serious action to revive the airline. It has a lot of potential, and very huge number of Pakistanis are working abroad. Company would attract them and activate public relation department. It would also work on cost reduction strategies.

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Appendices A
Important Facts about PIAC

Established	October 29, 1946
Age	75 years
Subsidiaries	1. Roosevelt Hotel 2. Hotel The Scribe (Paris) 3. Skyrooms (Pvt) Limited 4. PIA Investment Limited
Fleet size	28
Destinations	56
Parent company	Aviation division, GoP
Revenue	$590 million
Operating income	$-4.2 million
Net income	$-220 million
No. of employees	10500 (10 April 2021)
Website	https://www.piac.com.pk/corporate/

Source: Pakistan International Airlines (2021)

S. no.	Airline company	No. of employees	Fleet	Employees-to-fleet ratio
1	Garuda Indonesia	7,861	140	1:56.15
2	Turkish Airlines	18,882	298	1:63.36
3	Egypt Air	9000	63	1:141.41
4	Etihad Airlines	17712	119	1:148.84
5	Saudi Arabian Airlines	24842	163	1:152.40
6	Qatar Airways	31,000	173	1:179.19
7	Malaysian Airlines	14,000	77	1:181.82
8	Emirates Airlines	59,519	255	1:233.40
9	Thai Airways	25,323	82	1: 308.82
10	PIA	10,500	28	1:375
11	Syrian Arab Airlines	4,000	10	1:400

Appendices B
Employees-to-Fleet Ratio of Some Airlines

Source: Shah (2016)