Cost Efficiency Measurement of Leasing Companies with SFA and DEA Approach

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ARTICLE INFO	ABSTRACT
	Nowadays the leasing industry is a successful industry in economic conditions, but there are few studies that deal with the assessment of leasing companies' efficiency in Bangladesh. Previous research for leasing company's' efficiency measurement usually adopts either DEA or SFA method, but not both of them. Therefore, this paper is aimed to measure the cost efficiencies of 15 leasing companies from 2002 to 2008 by applying both SFA and DEA models with four inputs and two outputs. The results suggest that leasing companies have generally less experience in the allocation of resources and in the improvement of cost efficiency. The coefficients of Interest revenue and Non Interest revenue are found significant and positive effects on the cost efficiency of the leasing company in case of stochastic cost frontier model. The results of technical efficiency and allocative efficiency are combined to provide a measure of total cost efficiency in case of cost data envelopment analysis. The lowest cost efficiency (39.6%) for *Union Capital Limited*, and highest cost efficiency (89.7%) for *International Leasing & Financial S.Ltd.,* is observed in case of cost data envelopment analysis.

INTRODUCTION

Performance evaluation of the leasing companies is a most important issue because leasing has a vital role in economic development and growth and also contributes a major share in the gross domestic production (GDP) [6]. Kantawala [14] determined the financial performance of non-banking finance companies in India. Kantawala [14], Ahmad *et al*. [3], Alam *et al.* [5,6] examined the financial performance of the non-banking finance companies in Pakistan. They used financial the statement analysis and financial ratios analysis to evaluate financial performance of each company's/organization's. Pierce [18 examined the effects of organizational structure on the firm's strategy and performance of consumer automobile leasing. Akhundi *et al*. [4] developed a model for the evaluation of service quality in auto-industry leasing in Iran. They used the factor analysis to assess service quality and customer satisfaction in the form of performance. Majazi Dalfard *et al.* [16] applied the super efficiency DEA model to rank efficient leasing companies due to the failure of basic DEA models, there are other methods that can be used to rank the DMUs [19] in future studies.

There are only a few literatures available in the subject of leasing companies in Bangladesh. For instance, Khanam [12] reported that Bank Statements, Audited Balance Sheet or Tax Return might be valuable source of information to judge financial solvency of the party. Choudhury [8] accounted that leasing sector needs more attention both from Bangladesh Bank and Ministry of Finance so that they may have access to low cost credit lines for carrying on the leasing business with the objective to contribute to the overall industrial growth of the economy. Islam [13] studied the historical backgrounds of leasing and encompasses the operation of lease financing followed by three leasing companies IDLC, ULC, and PLC in Bangladesh. However, no study is available in leasing companies in Bangladesh through the estimated cost efficiency in the framework of stochastic frontier analysis and data envelopment analysis methodologies has come in our knowledge.

The measure of inefficiency derived from micro-economic theory [1], Charnes, Cooper, and Rhodes [9,10], and Banker, Charnes, and Cooper [7], has theoretical advantages relative to more traditional financial ratio measures. In this paper, we approach this question using a simple, yet direct measure of leasing company's performance or its efficiency, how well the resources available to the leasing company are managed. In order to sought this answer of this question, a combination of both DEA and SFA support management to have a more comprehensive evaluating of the efficiency of leasing companies and to identify the causes of inefficiency. Furthermore, both two methods are frontier function to measure efficiencies of leasing companies with panel data. This paper is aimed to measure the efficiencies of the 15 leasing companies from 2002 to 2008 by first

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applying SFA with Translog production function, and secondly by applying DEA with CCR and BCC models for panel data.

The paper is organized as follows. Section 2 discusses the background and literatures for leasing companies in Bangladesh. Section 3 presents the methodologies of SFA and DEA. Section 4 assesses the efficiency ratings of leasing companies. Finally, the main results and suggestions for future research are summarized.

Background of Leasing Companies in Bangladesh:

Leasing is relatively a new concept in Bangladesh. It is an innovative and alternative way of financing our commercial and industrial undertakings. Leasing business in Bangladesh has been miraculously developed during the short period of time. Leasing companies are key elements of a sound and stable financial system. Banks usually dominate the financial system in most countries because businesses, households and the public sector all rely on the banking system for a wide range of financial products to meet their financial needs. However, by providing additional and alternative financial services, leasing companies have already gained considerable popularity both in developed and developing countries. In one hand these institutions help to facilitate long-term investment and financing, which is often a challenge to the banking sector and on the other; the growth of leasing companies widens the range of products available for individuals and institutions with resources to invest. Through their operation leasing companies can mobilize long-term funds necessary for the development of equity and corporate debt markets, leasing, factoring and venture capital. Another important role which leasing companies' play in an economy is to act as a buffer, especially in the moments of economic distress. An efficient leasing companies sector also acts as a systemic risk mitigator and contributes to the overall goal of financial stability in the economy. Leasing companies of Bangladesh have already passed more than two and a half decades of operation. Despite several constraints, the industry has performed notably well and their role in the economy should be duly recognized. It is important to view leasing companies as a catalyst for economic growth and to provide necessary support for their development. A long term approach by all concerned for the development of leasing companies is necessary. Given appropriate support, leasing companies will be able to play a more significant role in the economic development of the country.

Bangladesh is an agricultural country gradually shifting towards industrialization. Traditionally, people of this subcontinent were reluctant to business and trade. But as the demand of time, they are inspired and inclined to take risk and establish business enterprises. The entrepreneurs are faced with scarcity of initial capital and if somehow they have started business they face serious shortage of working capital. In such case, they run for long term direct financing from commercial banks, specialized banks and other financial institutions, but receiving long term loans from direct financing institutions in Bangladesh is not an easy task. Leasing business in Bangladesh is providing for the alternative financing introduced by the three prominent leasing companies in Bangladesh; Industrial Development Leasing Company (IDLC), United Leasing Company (ULC) and Phoenix Leasing Company (PLC). Recently, some other leasing companies namely, Peoples Leasing Company, Bay Eastern Leasing Company, Industrial Leasing and Financial Services LTD, GSP Finance, etc. and a local private commercial bank have emerged in the market.

Growth of leasing in Bangladesh can be described by studying the profile of three prominent leasing companies such as IDLC Ltd., ULC Ltd. and PLC Ltd.

(a). Industrial Development Leasing Company (IDLC):

Industrial Development Leasing Company (IDLC) of Bangladesh Limited is the first and the largest leasing company of the country. IDLC has been established with the multinational collaboration of Development Finance Institutions, Commercial banks, Insurance and leasing companies. The leading leasing companies of the country, IDLC was incorporated on the first day of October in 1990 opened its one and only branch at Chittagong. After 10 years of its commencement, IDLC has captured almost 60% of the total market share of lease finance in the country. IDLC was listed in Dhaka Stock Exchange (DSE) on the 20th of March 1993 and on the 7th of February 1994; it was licensed under the Bangladesh Bank. IDLC, the pioneer leasing company in the country was set up in the private sector to serve as an additional and alternative source of capital asset financing in different enterprises. The lease finance to individuals is rare and corporate financed through operating lease is the general nature of business. Generally, IDLC does not encourage new entrepreneurs or new line of business. Thus, BMRE (Balancing, Modernizing, Replacing and Expanding) is the main objective if finance or leasing, when equipment is concerned for vehicle both new and reconditioned cars is taken into consideration.

(b). United Leasing Company (ULC) Ltd:

Subscription agreement was signed among the sponsors to form the United Leasing Company Ltd. on the 9th March 1989. The company was incorporated on the 27th April, 1989. Investment agreement has signed by the company with ADB in Manila on 27th July 1989. The company signed the first lease agreement with the lessee on 12th September 1989. The company issued 75,000 shares on 28th March 1994. Its operation expanded

further and the company open edits first branch in Chittagong on 16th June 1994. It traded its shares on Dhaka Stock Exchange (DSE) for the first time in 23rd June 1994. It was duly licensed under Financial Institutions Act, 1993 on the 7th February 1995. The company declared first dividend on 20th April 1995. The company's authorized capital is Tk. 120 million and issued, subscribed, and paid up capital is Tk.70million (Annual report, 1992-1997).

(c). Phoenix Leasing Company (PLC) Ltd.:

The phoenix leasing company (PLC) Ltd. was incorporated on 19th April 1995. It commenced business on the same date. It was duly licensed under Bangladesh Bank on 9th May 1995. It signed the first lease agreement on the 21st September 1995. Its operation expanded further and the company opened its branch in Chittagong on 25th September 1996. The authorized capital of the company is Tk.500 million and issued; subscribed and paid-up capital is Tk.50 million. PLC Ltd. is a promising leasing company. Its business performance is very much encouraging.

MATERIALS AND METHODS

The use of stochastic frontier models is flexible and easy to measure technical efficiency. In case of DEA, it is possible to distinguish the component of technical efficiency from scale efficiency. With DEA model, the frontier is built directly from data without any assumption on the production function as, instead, required by stochastic or parametric models. The stochastic frontier model distinguishes the component of inefficiency from noise component, while DEA model include the noise component in the inefficiency. However in this study, both SFA and DEA have been employed to measure efficiency of leasing companies allowing this advantages and disadvantages.

Stochastic Cost Frontier Model:

Following Aigner et al. [1] and Meeusen and Broeck [17], cost efficiency model can be defined as:

$$C_i = f(y_i, p_k, \varepsilon_i), \quad i = 1, \ldots\ldots, N \ldots\ldots \tag{1}$$

where, N stands for the number of leasing companies; C_i stands for the leasing company's total operational costs of i-th leasing companies; y_i represents the vector of output quantities of the i-th leasing companies; p_k is the vector of price inputs of the i-th leasing companies; and ε_i is a composite error term, through which the cost function varies stochastically. The term ε_i can be partitioned into two parts as follows:

$$\varepsilon_i = v_i + u_i \tag{2}$$

The equation (1) is represented in natural logs:

$$\ln C_i = f(y_i, p_k) + \ln v_i + \ln u_i \tag{3}$$

where, v_i refers to endogenous factors and u_i refers to exogenous factors, which impact the cost of the leasing company production. Thus the term v_i denotes a rise in the cost of leasing company production due to the inefficiency factor that may result from the mistakes of the management, such as non-optimal employment of the quantity or mix of inputs given their price. u_i represents a temporary rise or fall in the leasing company's costs due to the random factor that may stem from a data/measurement error, or unexpected/uncontrollable factors such as weather, luck, labor strikes, war, etc., that are not under the influence of the management. u_i are assumed to be identically distributed as normal variates and inefficiency scores are derived from a normal distribution, $N(0, \sigma_v^2)$. The relative efficiency of a leasing company can be estimated by means of the ratio, $\lambda = \dfrac{\sigma_v}{\sigma_u}$.

The specification of translog cost frontier model can be expressed in terms of leasing companies as follows:

$$\ln C_i = \alpha_0 + \sum_{i=1}^{2} \beta_i \ln y_i + \frac{1}{2} \sum_{i}^{2} \sum_{j}^{2} \beta_{ij} \ln y_i \ln y_j + \sum_{k=1}^{4} \rho_k \ln p_k$$

$$+ \frac{1}{2} \sum_{k}^{4} \sum_{m}^{4} \rho_{km} \ln p_k \ln p_m + \sum_{i}^{2} \sum_{k}^{4} \gamma_{ik} \ln y_i \ln p_k + v_i + u_i \ldots\ldots(4)$$

where, $\ln$ is natural logarithm; β_i , β_{ij} are parameter to be estimated for the frontiers of output; ρ_k , ρ_{km} are parameter to be estimated for input price of frontier model; γ_{ik} is parameter to be estimated for interaction effect.

Cost Data Envelopment Analysis Model:

Data Envelopment Analysis (DEA) evaluates the performance regarding a number of inputs and outputs simultaneously without considering any assumption about the functional form of the frontier. This approach also does not require priori assumptions of the relationship between inputs and outputs, and they can have very different units. It is initially introduced by Charnes *et al.* [9], is a nonparametric method to evaluate the efficiency of decision making units (DMUs).

Let us consider n DMUs (decision making unit) or leasing companies with m inputs and k outputs each one producing different output (y) and using different inputs (x). The cost efficiency of the leasing company followed by Charnes, Cooper and Rhodes [10], is measured as follows: $Min_{\theta,\lambda} \theta$

subject to $-y_r + \sum_{j=1}^{n} \lambda_j y_{rj} \geq 0,$

$$\theta x_i - \sum_{j=1}^{n} \lambda_j x_{ij} \geq 0, \tag{5}$$

$$\lambda_j \geq 0, \quad j = 1...n, \quad i = 1...m, \quad r = 1...k$$

The cost efficiency of the leasing company followed by Banker, Charnes and Cooper [7], is measured as follows:

$$Min_{\theta,\lambda} \theta$$

subject to $-y_r + \sum_{j=1}^{n} \lambda_j y_{rj} \geq 0,$

$$\theta x_i - \sum_{j=1}^{n} \lambda_j x_{ij} \geq 0,$$

$$\sum_{j=1}^{n} \lambda_i = 1 \tag{6}$$

$$\lambda_j \geq 0, \quad j = 1...n, \quad i = 1...m, \quad r = 1...k$$

where, θ indicates the efficiency score of DMUs, and it will satisfy $\theta \leq 1$, with a value of 1 indicating a point on the frontier, x_{ij} indicates the i-th input of the j-th DMU or leasing company, y_{rj} indicates the r-th output of the j-th DMU or leasing company, λ_j indicates the weight of the j-th DMU or leasing company.

Data Description:

All data have been gathered from the leasing companies' websites of Bangladesh. Fifteen companies, the Bay Leasing & Investment Limited, First Lease International Ltd., International Leasing & Financial S. Ltd., Industrial Development Leasing Co., Islamic Finance & Investment Ltd., Industrial Promotion & Development Co., Lanka Bangla Finance Limited, Oman Bangladesh Leasing & Finance Ltd., Prime Finance & Investment Ltd., People's Leasing & Financial Services Ltd., Phoenix Finance & Investments Ltd., Primer Leasing International Ltd., Union Capital Limited., United Leasing Company Ltd., and Uttara Finance & Investments Ltd. are selected for the performance evaluation.

The present study uses the financial statements of the selected companies from the year 2002 to 2008 because all required data were available during these years.

Dependent Variable:

Total Cost (C): Cost is measured as total cost, is defined by all expenses of leasing companies such as financial expenses, general and administrative expenses, other operational expenses, and depreciation on fixed assets.

Output Variables:

Interest Revenue (y_1): Interest Revenues account includes interest earned whether or not the interest was received or billed. Interest Revenues are non-operating revenue or income for leas not in the business of lending money. For companies in the business of lending money, Interest Revenues are reported in the operating section of the multiple-step income statement.

Non- Interest Revenue (y_2): This represents money gained by leasing company on investment transactions. Non-interest revenue is any type of income that is generated from the application of fees, rather than from interest that is applied to the outstanding balance of a financial account. Income of this type is often associated with financial institutions.

Input Variables:

Financial Expenses (p_1): Financial expenses include the cost of materials, employee salaries, and other overhead. Expenses also include unusual costs like employee bonuses.

General and Administrative Expenses (p_2): Expenditures related to the day-to-day operations of a business. General and administrative expenses pertain to operation expenses rather that to expenses that can be directly related to the services. General and administrative expenses include rent, audits, insurance and managerial salaries.

Other Operational Expenses (p_3): Other operational expenses are calculated by sum of IPO-Expenses, Bank charges, conveyance and travelling, office maintenance, entertainment expenses, fair expenses, newspaper and periodicals, credit rating fees, subscription and donation.

Depreciation on Fixed Assets (p_4): The Depreciation to Fixed Assets ratio measures how diligently the company is replacing its old fixed assets with replacements. Companies will often acquire fixed assets such as new buildings, processes and machinery, and automation with hopes of gaining increased sales over the lifespan of those assets.

Comparison of SFA and DEA Methods:

Although both SFA and DEA methods are efficiency frontier analysis and are originally introduced to the efficiency concepts developed by Farrell, there are essential differences between the econometric approach and mathematical programming methods to construction of a production frontier and calculation of efficiency relative to the frontier as shown in Table 1. DEA is a non-parametric approach and is suited to measure efficiencies of deterministic industry for multiple inputs/outputs information. DEA has been applied to assess performance of non-profit organizations or branches, such as school, hospitals, universities, courts, public sector, agriculture, *etc*. But in recent years, more and more scholars have applied it to evaluate performance of profit organizations. On the other hand, SFA is a parametric approach, and is suited to measure efficiencies of stochastic industry for input/output information. SFA needs to assume a production function of the usual regression form and a distribution type of error item which is equal to the sum of two components, the first part is symmetric and captures statistical noise such as weather, luck, machine breakdown and other events beyond the control of firms, and the second part represents technical inefficiency of firms. SFA has been applied to measure performance of profit organizations.

Consistency Both DEA and SFA methods are efficiency frontier analysis, and are similar in that they determine a frontier and inefficiency based on that frontier. Both parametric method non-parametric methods are used to measure efficiency for example; technical efficiency, scale elasticity, allocative efficiencies, technical change and TFP change.

Strengths of SFA
It doesn't assume that all firms are efficient in advance.
SFA makes accommodation for statistical noise such as random variables of weather, luck, machine breakdown and other events beyond the control of firms, and measures error.
It doesn't need to price information available.
It is capable to hypothesis test.
To estimate the best technical efficiencies of firm, rather than average technical efficiencies of firm.
Strengths of DEA

It doesn't assume that all firms are efficient in advance.

It could handle with efficiency measurement of multiple inputs and multiple outputs.

It doesn't need to price information available.

It does not need to assume function type and distribution type.

While sample size is small, it is compared with relative efficiency.

Both the CCR and BCC models have nature of unit invariance.

Weakness of SFA

It needs to assume functional form and distribution type in advance.

It needs enough samples to avoid lack of degree of freedom.

The assumed distribution type is sensitive to assessing efficiency scores.

Weakness of DEA

It doesn't make accommodation for statistical noise such as measure error.

It isn't capable to hypothesis test.

When the newly added DMU is an outlier, it could affect the efficiency measurement.

SFA has applied to measure performance of profit organizations. DEA has applied to assess performance of non-profit organizations or branches of firm [11,15].

RESULTS AND DISCUSSION

Cost Efficiency of Leasing Company Using Stochastic Frontier Analysis:

The maximum likelihood estimates of the Translog stochastic cost frontier model for the selected leasing companies in Bangladesh are reported in Table-1. A significant positive or negative coefficient for any variable suggests that it increases or decreases cost efficiency of leasing company. The coefficients of Interest revenue and Non Interest revenue are found significant and positive effects on the cost efficiency of the leasing company. The coefficient of Interest revenue β_1 (0.517) is significant at 5% level and the coefficient of Non Interest revenue β_2 (0.170) is highly significant at 1% level. Both results positively influence to the leasing company in case of stochastic cost frontier model. These results suggest that the output variable Non Interest revenue is positively affected to total cost. The input variable General and administrative expenses ρ_2 (0.181) is positively significant at 10% level.

Leasing Company Wise and Year-wise Average Cost Efficiency using Stochastic Cost Frontier Analysis:

The cost efficiency scores for the selected leasing company are illustrated in Table-2 and Figure 2. The average cost inefficiency (5.9%) is observed for the selected leasing company. The lowest cost inefficiency is 2.5% for United Leasing Company Ltd. while the highest cost inefficiency is 18.7% for Industrial Pormotion & Development Co.

Year-wise average cost efficiency for leasing company is given in Table-3 and Figure 3. The highest cost inefficiency is 8% in the year of 2002 and the lowest cost inefficiency is 4.5% in the year of 2004. Average cost efficiency is decreased from the year 2002 to 2004 and then it is increased by year.

Leasing Company Wise Cost Efficiency using Data Envelopment Analysis:

The evaluation of technical efficiency, allocative efficiency cost efficiency for the selected sample Leasing Company is presented in Table-4 for cost DEA. The average technical and allocative efficiency (*inefficiency*) are 83.6%% (*19.6%*) and 80.8% (*23.7%*) respectively for cost DEA. The technical efficiency is always greater than allocotive efficiency for the selected Leasing Company. However, technical efficiency is found small than the allocative efficiency in case of *First Lease International Ltd., Industrial Pormotion & Development Co.* and *Primer Leasing International Ltd.*. The results of technical efficiency and allocative efficiency, these two measures are combined to provide a measure of total cost efficiency. The lowest cost efficiency is 39.6% for *Union Capital Limited*, and highest cost efficiency is 89.7% for *International Leasing & Financial S.Ltd.,* in terms of cost DEA.

Table 1: Maximum Likelihood Estimates of Translog Stochastic Cost Frontier Model for Leasing Company

Variable	Parameter	Coefficient	Standard-error	T-ratio
CONSTANT	β_0	0.191*	0.111	1.708
y_1	β_1	0.517**	0.205	2.519
y_2	β_2	0.170***	0.040	4.178
p_1	ρ_1	0.175@	0.303	0.577

p_2	ρ_2	0.181^*	0.104	1.739
p_3	ρ_3	$0.009^@$	0.013	0.689
p_4	ρ_4	$-0.007^@$	0.019	-0.409
y_1^2	β_{11}	$-0.002^@$	0.795	-0.002
y_2^2	β_{22}	$-0.012^@$	0.739	-0.163
p_1^2	ρ_{11}	$0.039^@$	0.877	0.044
p_2^2	ρ_{22}	$-0.062^@$	0.740	-0.084
p_3^2	ρ_{33}	$-0.006^@$	0.731	-0.009
p_4^2	ρ_{44}	$0.034^@$	0.733	0.046
$y_1\,y_2$	β_{12}	$-0.007^@$	0.910	-0.007
$y_1\,p_1$	γ_{11}	$0.018^@$	0.891	0.020
$y_1\,p_2$	γ_{12}	$-0.032^@$	0.906	-0.035
$y_1\,p_3$	γ_{13}	$-0.004^@$	0.900	-0.004
$y_1\,p_4$	γ_{14}	$0.016^@$	0.896	0.017
$y_2\,p_1$	γ_{21}	$0.013^@$	0.906	0.014
$y_2\,p_2$	γ_{22}	$-0.037^@$	0.891	-0.420
$y_2\,p_3$	γ_{23}	$-0.009^@$	0.888	-0.010
$y_2\,p_4$	γ_{24}	$0.011^@$	0.887	0.012
$p_1\,p_2$	ρ_{12}	$-0.011^@$	0.910	-0.013
$p_1\,p_3$	ρ_{13}	$0.016^@$	0.918	0.017
$p_1\,p_4$	ρ_{14}	$0.036^@$	0.924	0.039
$p_2\,p_3$	ρ_{23}	$-0.034^@$	0.888	-0.039
$p_2\,p_4$	ρ_{24}	$-0.014^@$	0.887	-0.016
$p_3\,p_4$	ρ_{34}	$0.013^@$	0.886	0.015
SIGMA-SQUARED	σ^2	0.013	0.003	4.115
GAMMA	γ	0.736	0.147	5.009
Likelihood function		115.369		

*** Significant at the 0.01 level, ** Significant at the 0.05 level,   *Significant at the 0.10 level,   @ means insignificant.

Table 2: Average Cost Efficiency for Selected Leasing Company using Stochastic Cost Frontier Analysis

Leasing Company	Serial Number	Cost Efficiency
Bay Leasing & Investment Limited.	1	1.116
First Lease International Ltd.	2	1.027
International Leasing & Financial S.Ltd.	3	1.069
Industrial Development Leasing Co.	4	1.041
Islamic Finance & Investment Ltd.	5	1.055
Industrial Promotion & Development Co.	6	1.187
Lanka Bangla Finance Limited.	7	1.026
Oman Bangladesh Leasing & Finance Ltd.	8	1.036
Prime Finance & Investment Ltd.	9	1.058
People's Leasing & Financial Services Ltd.	10	1.033
Phoenix Finance & Investments Ltd.	11	1.049
Primer Leasing International Ltd.	12	1.045
Union Capital Limited.	13	1.051
United Leasing Company Ltd.	14	1.025
Uttara Finance & Investments Ltd.	15	1.066
	Mean	1.059

Table 3: Yearwise Average Cost Efficiency of Leasing Company by Stochastic Cost Frontier Analysis

Year	Cost Efficiency
2002	1.080
2003	1.048
2004	1.045
2005	1.060
2006	1.056
2007	1.071
2008	1.052
Mean	1.059

Fig. 2: Average Cost Efficiency of Selected Leasing Company using Stochastic Frontier Analysis
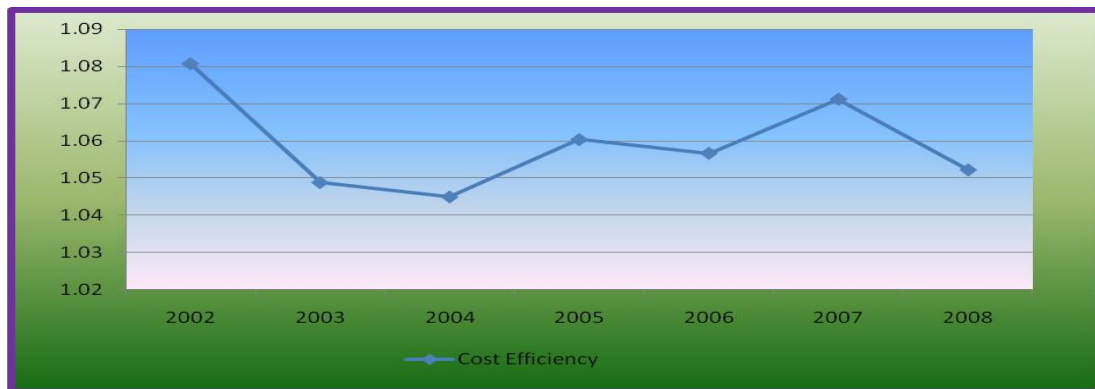

Fig. 3: Yearwise Average Cost Efficiency of Leasing Company by Stochastic Frontier Analysis

Table 4: Leasing Company Wise Cost Efficiency by Data Envelopment Analysis

Leasing Company	Cost Efficiency		
	TE	AE	CE
Bay Leasing & Investment Limited.	0.984	0.897	0.882
First Lease International Ltd.	0.752	0.854	0.642
International Leasing & Financial S.Ltd.	0.974	0.921	0.897
Industrial Development Leasing Co.	0.842	0.765	0.644
Islamic Finance & Investment Ltd.	0.698	0.632	0.441
Industrial Pormotion & Development Co.	0.687	0.712	0.489
Lanka Bangla Finance Limited.	0.954	0.921	0.878
Oman Bangladesh Leasing & Finance Ltd.	0.912	0.865	0.788
Prime Finance & Investment Ltd.	0.932	0.897	0.836
People's Leasing & Financial Services Ltd.	0.874	0.812	0.709
Phoenix Finance & Investments Ltd.	0.962	0.932	0.896
Primer Leasing International Ltd.	0.785	0.798	0.626
Union Capital Limited.	0.648	0.612	0.396
United Leasing Company Ltd.	0.831	0.812	0.674
Uttara Finance & Investments Ltd.	0.719	0.698	0.501
Mean	0.836	0.808	0.687

Conclusion:

This paper evaluates the performance of leasing companies through cost efficiency in the framework of stochastic cost frontier model and cost data envelopment analysis model. The sample data focuses on Bangladesh leasing industry. The results suggest that the output variable Non Interest revenue is positively influence to the leasing company in case of stochastic cost frontier model. The average technical and allocative efficiency (*inefficiency*) 83.6% (*19.6%*) and 80.8% (*23.7%*) respectively are observed in case of cost data envelopment analysis. The technical efficiency is recorded greater than allocative efficiency for the selected Leasing Company. The average cost inefficiency (5.9%) is observed in case of stochastic cost frontier model and whereas in case of cost DEA model the average cost efficiency is found (68.7%).

The future challenges to the leasing business will come from increased competition in the lease market and the increased government intervention to relate the leasing companies. In fine, it can be said that leasing business will continue to grow in Bangladesh as a preferred means of acquiring equipment for its convenience and flexibility in financing. This study contributes to the previous literature both by extending the literature on efficiency and by investigating the determinants of efficiency in the leasing industry.

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