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Analysis of Firm Financial Performance Models in Construction Industry

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ABSTRACT

Construction industry plays a vital role in creating employment opportunities for millions of unskilled and skilled workforce in construction and allied industry firms in developing economies. The dynamic nature of construction industry and its competitive and risk prone work environment has forced the constituent firms to continuously seek strategies to improve their financial performance. This paper provides empirical evidence from the Pakistan to establish the strength of an updated model and developing a firm performance score for better assessment and ranking of construction industry firms. The methodology includes the regression analysis to regress firm financial performance using 10 appropriate financial ratios. The results not only support the use of financial ratios as good predictors of firm performance but also establish the wider application for different stakeholders in the construction industry.

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INTRODUCTION

Performance evaluation of construction companies' gains its importance from the fact that today's globalized world is not only providing opportunities to national and multinational firms but also the competitive environment has necessitated a continuous need to improve their financial performance. Such evaluations are deemed essential for owners, shareholders, and funding agencies because these indicate the realistic position of different firms in an industry. If the company position is good, this will increase the agencies' interest in the company and vice versa.

The objective of this paper is to develop a financial performance model that evaluates a company's financial situation within the construction and allied sector firms in Pakistan. The current study presents a performance evaluation model based on financial ratios that incorporate financial performance score and regress it against the ten ratios considered appropriate for the construction industry firms.

Methodology:

The study has employed a quantitative approach and secondary data were collected and used to conduct the required analyses to evaluate the financial performance model and testing the significance of using the selected financial ratios for construction firms in Pakistan. The sample of firms included in the study consisted of construction and allied industry firms. The target population comprised of a total of 81 firms from construction, cement and other allied sectors.

The data required for conducting financial analyses of listed companies was collected from Karachi Stock Exchange (KSE), International Financial Statistics (IFS), State Bank of Pakistan (SBP) and, Ministry of Finance websites. The study collected and used The data collected for nine consecutive years i.e from 2002 to 2010.

The study employed a more thorough and comprehensive methodology by incorporating 10 financial ratios and developed performance scores at firm level for performance-based categorization of selected firms. The ten ratios that were used for conducting firm performance analysis included Acid Test Ratio, Financial Expenses as Percent of Sales Ratio, Current Ratio, Debt to Equity Ratio, Return on Assets Ratio, Return on Equity Ratio, Dividend Cover Ratio, Net Profit Margin Ratio, Earnings per Share after Tax Ratio, and Break-Up Value Shares Ratio.

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Normailization of Data:

The collected data were prepared for mathematical formulation and usage. As some financial ratios are calculated in terms of time while others as percentages their mathematical formulation is generally found biased to the larger values of ratios. Besides, as established by Kangari, the financial structure and other characteristics of companies of different sizes are not similar, comparing the performance of large, medium and small companies among themselves or with the overall industry average does not seem appropriate. This problem was resolved by adjusting the normalized ratio value by size factor (Z_i).

Formulation of Firm Performance Score (F_{PS}):

Kangari *et al*. [5] defined a company's performance score as "a performance grading system for assessing the position of a company within the overall construction industry and which is very difficult to be assigned a certain value". This method was later applied by Goda [3] and now the current study has adopted a firm performance score (F_{PS}) using values such as 100, 0, and −100 to indicate the upper, median, and lower quartiles, respectively, of the calculated financial ratios.

RESULTS AND DISCUSSION

This section discusses the results and relate it different studies in the field.

Data Normalization for Ratio Analysis:

Besides, as established by Kangari and discussed above, the financial structure and other characteristics of companies of different sizes are not similar which makes performance comparisons difficult. This problem was resolved by adjusting the normalized ratio value by size factor (Z_i). As discussed above, the size issue was resolved by adjusting the normalized ratio values by size factor (Z_i) coefficients (Table 1) based on total assets (TA) of selected firms.

Table 1: Size Factor Values (Z_i) of Construction Firms.

Size Factor Zi Values Based on Total Assets of Firms				
Financial Ratios	Range of Total Assets (Million Rs)			
	TA < 2000	2000 < TA< 5000	5000 < TA< 10,000	10,000 < TA< 20,000
Acid test/quick ratio	42.2	18.5	38.5	41.1
Financial expenses % of sales	7.8	7.6	5.5	6.5
Current ratio	51.0	21.1	40.0	43.2
Debt equity ratio	204.1	55.2	208.3	36.2
Return on assets	-1.9	2.4	1.7	4.2
Return of equity	-26.3	1.2	-0.4	8.1
Dividend cover ratio	33.3	41.1	0.3	151.9
Net profit margin	-49.4	-3.2	2.1	7.6
EPS(after tax)	-1.0	-0.1	0.2	2.9
Break-up value shares	12.0	26.9	9.8	30.6

Using the size factor values (Zi) the normalization coefficients derived for values of selected financial ratios of sample firms are presented in Table 2. The size factor coefficients showed a much wider range of values for the ten ratios (0.0 to 433.4) for construction firms as compared to a narrow range (0.0 to 16.2) for allied industry firms. Combining the firms resulted in reduction of this variation (0.0 to 104.8) and, thus, all firms were treated as construction and allied industry firms for data analysis. Besides, the Dividend Cover Ratio (0.0 coefficient) was excluded from the regression analysis equation of firm performance score (F_{ps}) model.

Table 2: Normalization Coefficients.

Normalization Coefficient f(n) for Construction and Allied Industry Firms				
S. No	Financial Ratios	Firms in		
		Construction	Allied	Construction & Allied
1	Acid Test Ratio	36.0	10.7	16.4
2	Financial Expenses of Sales	117.4	1.9	27.5
3	Current Ratio	55.4	12.5	22.1
4	Debt to Equity Ratio	89.3	16.2	32.5
5	Return on Assets	27.3	0.9	6.7
6	Return of Equity	58.7	2.1	14.7
7	Dividend Cover Ratio	0.0	0.0	0.0
8	Net Profit Margin	35.1	0.9	8.5
9	Earnings (after tax) per Share	413.8	15.4	104.0
10	Break-up Value per Share	433.4	10.9	104.8

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Firm Performance Score (F_{ps}) Analysis:

Using the normalized coefficients and following the statistical procedure (discussed above) the regression coefficients were derived for values of selected financial ratios of construction and allied industry firms. The summary statistics for Fps regression model is presented in Table 3,

Table 3: Fps Regression Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Fps	.839	.704	.666	47.465

a. Predictors: (Constant), Break-up value shares, Debt/Equity ratio , Acid test Ratio, ROE , Fin Exp of sales , EPS, Current ratio, NPM, ROA
b. Dependent Variable: Fps

In the summary statistics, R-square value of 0.704 means that the IVs in Fps regression model explain 70.4 percent of the variation in DV (Fps) and the remaining is the error term. The S.E of regression measures the degree of association between the two series and the large value of 47.465 shows that predicted values may deviate considerably from the regression line. It may, however, be mentioned here that S.E values cannot be sometimes directly compared because these are expressed in terms of original units Fps which are not directly comparable with values of IVs (financial ratios). The Fps regression model makes two assumptions about the structure of the model: one, all important variables (predictors) have been included and no unimportant ones are included; two, the residuals are independent and normally distributed and they have equal variances for any X value. Table 4 below explains the variation in the DV (Fps).

Table 4: ANOVA[b.]

Fps Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	380039.501	9	42226.611	18.743	.000[a]
	Residual	159960.499	71	2252.965		
	Total	540000.000	80			

a. Predictors: (Constant), Break-up value shares, Debt/Equity ratio, Acid test Ratio, ROE, Fin Exp as % of sales, EPS, Current ratio, NPM, ROA
b. Dependent Variable: Fps

The value of F test for the model is F (9, 71) = 18.743 is significant ($p < .001$) which means that the overall regression model is significant. In other words, the higher F value indicates that IVs (predictors) of firm performance score are closely related to Fps derived for sample firms. This Table also provides the data that is used to compute R^2 (= SS regression / SS Total = 380039.501/540000= 0.70377). Finally, Table 5 provides full information about the Fps model and both un-standardized as well as standardized regression equations can be derived.

Table 5: Fps Model Regression Coefficients[a].

Fps Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	-73.108	8.065		-9.064	.000
	Acid test Ratio	-4.434	1.061	-1.095	-4.179	.000
	Fin Exp as % of sales	-.796	.342	-.578	-2.324	.023
	Current ratio	6.624	1.035	2.022	6.401	.000
	Debt/Equity ratio	.815	.180	.516	4.539	.000
	ROA	7.583	4.035	1.287	1.879	.064
	ROE	-1.615	1.664	-.586	-.970	.335
	NPM	-1.065	2.016	-.231	-.528	.599
	EPS	-.356	.111	-1.018	-3.199	.002
	Break-up value shares	.130	.106	.356	1.229	.223

a. Dependent Variable: Fps

Conclusion:

The study has accomplished its objective by developing a firm performance score using ten most appropriate (as used by the central bank of Pakistan) financial ratios and used multiple regression model to analyze the relevance and determine the strength of relationship between selected independent variables (financial ratios) and dependent variable (firm performance score. The results are not only in conformity with above discussed related studies but also show high strength of model such that the selected financial ratios have explained 70 percent of the variation in the firm performance scores. The financial performance analysis using appropriate financial ratios and developing a firm performance score for construction and allied industry firms can provide contractors advanced knowledge of a subcontractor's financial position which may be useful for enhancing their financial performance.

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REFERENCES

[1] Ahmed Elyamany, Ismail Basha, M. ASCE and Tarek Zayed, M. ASCE, 2007. Performance Evaluating Model for Construction Companies: Egyptian Case Study Journal of Construction Engineering and Management, 133(8) ISSN 0733-9364/2007/8574-581
[2] Ball, R., S.P. Kothari and A. Robin, 2000. The Effect of International Institutional Factors on Properties of Accounting Earnings. Journal of Accounting and Economics, 29: 1-51.
[3] Goda, A., 1999. "Assessment of construction contracting companies performance in Egypt." Ph.D. thesis, Faculty of Engineering Library, Zagazig University, Egypt.
[4] Hasabo, H.A., 1996. Modern directions in financial and accounting analysis, PhD Thesis, Chicago University Press, Chicago.
[5] Kangari, R., F. Farid and H.M. Elgharib, 1992. "Financial performance analysis for construction industry." Journal. Construction Engineering Management, 118(2): 349-361.
[6] Kangari, R., Farid F., and M.H. Elgharib, 1992. "Financial Performance Analysis for Construction Industry", Journal of Construction Engineering and Management, 118-2.