Factors affecting the profitability of Indian listed firms: a panel data approach

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Abstract: The aim of this study is to empirically investigate the factors that affect the profitability of 1,308 listed firms operating in Bombay Stock Exchange (BSE) in India for the time period from 2011 to 2018. The research uses (pooled, fixed and random effect) models. Profitability is the dependent variable measured by three indicators which are return on equity (ROE) and earning per share (EPS). Liquidity (CR), leverage (LEV), company efficiency (CEFF), firm size (FSIZE), and working capital (WC) are considered as independent variables. The results of the study show that leverage, company efficiency, and firm size have a strong relationship with profitability measured by ROE. The results also reveal that company efficiency and firm size have a positive association with firms' profitability measured by ROE and EPS. The current research has three practical implications. First, it seeks to fill an existing gap in the literature of listed firms' profitability in Indian firms. Second, it provides new empirical evidence using different statistical analysis tools as a methodological contribution and used new variables. Finally, the present study brings useful insights and empirical evidence on the factors affecting profitability of Indian listed companies which are very beneficial for both internal users and external.

Keywords: banks' profitability; liquidity; leverage; efficiency; working capital; India.

Reference to this paper should be made as follows: Al-Homaidi, E.A., Farhan, N.H.S., Alahdal, W.M., Khaled, A.S.D. and Qaid, M.M. (2021) 'Factors affecting the profitability of Indian listed firms: a panel data approach', *Int. J. Business Excellence*, Vol. 23, No. 1, pp.1–17.

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1 Introduction

Profitability means the capacity of an organisation, company, firm, or enterprise to profit. It shows how efficiently the management can make a profit by using all the resources available in the market. Howard and Upton (1961) "reported that profitability is the ability of a given investment to earn a return from its use". India is presently extensively viewed as a new growth engine and an essential partaker in the global economy. "Industry accounts for 26% of GDP and employs 22% of the total workforce. According to the World Bank, India's industrial manufacturing GDP output in 2015 was 6th largest in the world on current US dollar basis ($559 billion), and 9th largest on inflation-adjusted constant 2005 US dollar basis ($197.1 billion)" (Sidhu and Bhatia, 2013). Due to the 1991 economic reforms that detached import constraints, introduced

global competition led to the privatisation of some government-owned public-sector sectors improvement the foreign direct investment (FDI) system, and developed infrastructure led to the growth of fast-moving consumer goods production (Ravan, 1991). Post-liberalisation, cumulative national and foreign rivalry, along with the threat of cheaper Chinese imports, challenged the Indian private industry. Since then, the change has been fingered by squeezing expenses, renovating management, and relying on inexpensive labour and fresh technology. However, this has also condensed the generation of jobs, even among the lower producers who used to banked on labour-intensive processes (Thomas, 2011).

Factors that affect firms' performance are either macro or micro factors and they have an important impact on firms' performance. Macro factors are those factors that are out the control of the company, whereas micro factors include the factors that are under the control of the company. The changes that might happened for macro-economic factors will positively or negatively affect the financial performance of a company. Similarly, if any changes occur for the micro factors, will have the same effect either positively or negatively on the firms that belongs to the same industry. There could be number of reasons for this difference in response of the firms to the same macro changes but all of these reasons are related to the micro factors of the firm (Demirhan and Anwar, 2014). Several studies have investigated this issue all around the world in developed and developing counties, e.g., Almajali et al. (2012) who conducted his study in developing countries. The question is that, will the findings of those studies go in line with the findings of this study or there will be contradicting. In India, some studies about factors affecting firms' profitability were conducted and revealed the dispersed results. In addition, those studies did not mainly focus on the effects from internal. Moreover, the existing studies are cross-sectional or time series and there is no study focusing on firms. Therefore, it is imperative for us to conduct this research aiming to find out the factors that affect the financial performance of Indian companies listing in Bombay Securities Exchange. The present study examines the factors affecting profitability of Indian firms listed on Bombay Stock Exchange (BSE).

The objective of the study can be attained by the following sub-objectives: to study the association between liquidity, leverage, firm efficiency, firm size, and working capital (WC) with profitability of Indian listed companies for the period from 2011 to 2018. The remainder of this paper is organised as follows: Section 2 covers the literature review and hypotheses testing of the study. Section 3 explains the research methodology and sample selection. Section 4 shows data analysis and research findings. Section 5 provides a conclusion of the current research.

2 Literature review

Numerous prior research that has investigated the profitability of banking sector in different countries (e.g., Dietrich and Wanzenried, 2014; Ongore and Kusa, 2013; Chinoda, 2014; Menicucci and Paolucci, 2016), but very few previous studies have led to measure the profitability of companies (e.g., Ghosh, 2006; Kuntluru et al., 2008; Jackling and Johl, 2009; Mishra and Suar, 2010). Typically, some of prior studies used return on equity (ROE) for measuring profitability, e.g., Malichov and Mária (2015), Trad et al. (2017), Bouzgarrou et al. (2017) and Ferreira et al. (2018), while other studies employed earnings per share (EPS), e.g., Abbas et al. (2014) and Jedidia (2016).

Nevertheless, Abbas et al. (2014) found that leverage ratio has an optimistic and statistically substantial inspiration with firms' profitability. Oliveira et al. (2011), Xu and Banchuenvijit (2015) and Mandiefe (2016) indicated a positive and statistically significant influence between leverage ratio and firms' profitability. Several studies have investigated the impact of firms specific on firm's performance (e.g., Mauwa, 2016; Das and Swain, 2017; Matar and Eneizen, 2018). Mauwa (2016) believe that dividend policy had a positive influence over ROA whereas capital structure negatively affected ROE. Similarly, Das and Swain (2017) argue that marketing expense, size, brand value, and dividend payout have a positive relationship with profitability whereas leverage has a negative association with firms' profitability. In the same vain revenue, and liquidity are positively correlated with the firm's performance while firms size and leverage are negatively correlated. Another studies conducted by Dey et al. (2015), Mauwa (2016) and Matar and Eneizen (2018) believe that capital structure has a negative impact on firms' financial performance. Omondi and Muturi (2013), Ben Selma Mokni and Rachdi (2014) and Issn et al. (2017) reported that bank size has a positive and statistically significant influence on profitability. Mohd Zaid et al. (2014) examined the factors that impact the financial performance of construction firms in Malaysia. It was found that liquidity and size are positively associated with profitability. Ganguli (2016) believes that liquidity may lead to agency cost and may hinder performance.

Olowokure et al. (2016) revealed that firm size and leverage ratio have a substantial connotation with quality of financial reporting. Ghosh (2006) examined the link between financial performance and boards of 127 Indian listed companies (non-financial) for the period of 2003. The outcomes presented that greater boards incline to have a diminishing consequence on firm financial performance. The discoveries similarly recommended the reimbursement of the CEO has a momentous influence on the company performance. Jackling and Johl (2009) stated that the larger board size has a positive impact on firm profitability. Alarussi and Alhaderi (2018) aimed to investigate the factors that affect the profitability of Malaysian-listed firms. Results revealed a positive association between firm size, WC, company efficiency and firms' performance. It is also found that there is a negative relationship between both debt equity ratio and leverage ratio and profitability.

2.1 Company leverage

Company leverage ratio can be defined by debt to equity ratio in the capital construction of a company. The ratio of debt to equity has an impact on shareholders' profits and risk, which distresses the cost of capital and the market value of the company (Pandey, 2007). The companies with high leverage may be at peril of insolvency if they are incapable to refund their debt; they may be incapable to discover new creditors in the future. Leverage is not always bad, it can rise shareholders return on their investments and make good use of the tax compensations connected with borrowing. Some of the prior studies used leverage ratio (e.g., Almajali et al., 2012; Abbas et al., 2014; Deitiana and Habibuw, 2015; Xu and Banchuenvijit, 2015; Mandiefe, 2016; Olowokure et al., 2016; Chen et al., 2017). Many of previous research revealed that there a positive but significant influence between leverage ratio and firms' performance (e.g., Oliveira et al., 2011; Xu and Banchuenvijit, 2015; Mandiefe, 2016). Jackling and Johl (2009) and Omondi and Muturi (2013) reported negative influence among leverage ratio and firms' financial performance. Chandra et al. (2019) investigated the factors that affect leverage,

profitability and stock returns and the relationship between leverage and firms' performance. Charumathi (2012) analysed the determinants of profitability of Indian life insurance companies. It was revealed that profitability is negatively and significantly impacted by leverage. Deitiana and Habibuw (2015) revealed that leverage ratio has a consequence on a firm's profitability. Abbas et al. (2014) initiated that there is no much improvement in the leverage ratio of these banks in Pakistan.

H1 There is a positive association between leverage (LEV) and profitability of Indian listed companies under the period from 2011 to 2018.

2.2 Company size

Company size used by previous studies in different countries (e.g., Amato and Burson, 2007; Alanazi et al., 2011; Almajali et al., 2012; Burca and Batrinca, 2014; Olowokure et al., 2016; Olson and Zoubi, 2017). Athanasoglou et al. (2008) reported that the rise in company size growth the profitability of the bank. Deitiana and Habibuw (2015) indicated that size of the company has no outcome on profitability. Amato and Burson (2007) reported that the relationship between firm size and profitability defined by (ROA) for financial services. The results indicated that there is association between return on assets (ROA) and company proportions. Amato and Wilder (1985) revealed that there is no relationship between firm size and rate of profit. Malik (2011) found a positive association between firm size and financial performance. Meanwhile, Akinlo and Asaolu (2012) believe that there is a positive association between size and firm performance.

H2 There is a positive relationship between company size (CSIZE) and profitability of Indian listed companies under the period from 2011 to 2018.

2.3 Company liquidity

Liquidity is measured as a company's capacity to rapidly convert an asset to money. It's described as well as "the ability of a firm to pay off its short-term obligations. Liquidity is measured by a number of ratios, such as current ratio, quick ratio, and cash ratio. Liquidity is very important to run the business properly" (Alarussi and Alhaderi, 2018). Abbas et al. (2014) revealed that liquidity ratio has no more increase in the ratio of these commercial banks which means that there is an adverse enhancement in the financial performance. Many of prior investigations used liquidity ratio (e.g., Moin, 2008; Almajali et al., 2012; Masood and Ashraf, 2012; Abbas et al., 2014; Issn et al., 2017; Chen et al., 2017). Masood and Ashraf (2012) found that liquidity ratio (LQ) has an adverse connection by means of (ROA) and an immaterial relationship with a firm's financial performance. Moin (2008) stated that the liquidity ratio has no significant alteration amongst the two sets of banks. Edi and Binti (2010) indicated a significant association among current ratio and firms' profitability of 172 listed companies working in Malaysian. Deitiana and Habibuw (2015) showed that there is no impact between liquidity ratio and firms' profitability.

H3 There is a positive relationship between liquidity (CR) and profitability of Indian listed companies under the period from 2011 to 2018.

2.4 Company efficiency

Innocent et al. (2013) investigated Nigerian pharmaceutical companies 'profitability for the period 2001 to 2011. The outcomes showed that debt turnover ratio, creditor speed, and complete turnover ratio of assets have a negative connection with firms' profitability. Warrad and Al Omari (2015) explored and established the effect of the complete turnover of assets Jordanian industrial enterprises 'ROA' turnover ratio for the period 2008–2011. The findings of the regression analysis showed that the total asset turnover ratio has an important impact on ROA. Thus, modifications in asset return (ROA) may be shown by the complete turnover ratio of assets. Nevertheless, Selling and Stickney (1989) found a negative association was disclosed in 15 of the total asset turnover and OPM ratios. Warrad and Al Omari (2015) examined the effect of fixed assets turnover ratio and total assets turnover ratio on the profitability of firms in the Jordanian industrial sector. The study used simple liner regression to test the effect for the period from 2008–2011. The study found a significant impact of total assets turnover ratio on the Jordanian industrial sector' profitability. Reed and Reed (1989) stated the negative association between complete asset turnover and OPM ratios. The use of OPM and asset turnover ratios to forecast future profitability was examined by Fairfield and Yohn (2001). They disclosed that the two indicators were correlated negatively and that the connection was important.

H4 There is a positive relationship between company efficiency (CEFF) and profitability of Indian listed companies under the period from 2011 to 2018.

2.5 Working capital

Alarussi and Alhaderi (2018) stated that the connection between WC and profitability of companies is strongly positive. Chowdhury and Amin (2007) looked at the influence of WC on firms' profitability (ROA) of companies. Moreover, Alipour (2011) used various study and correlation of Regression Analysis of 1,063 Tehran Stock Exchange-listed companies. The results disclosed an important connection among management of WC and firms' profitability. In nations in the developing world. The findings showed a beneficial but substantial connection between WC and the profitability of companies. Burja (2011) has shown the same results. However, Dong and Su (2010) noted that there is an adverse connection mentioned in the Vietnam Stock Market between WC leadership and the profitability of companies. Since the results in developing nations are not consistent, this study explored the connection between WC and firms' profitability of companies in listed Indian firms, and the second hypothesis is as follows, based on the above discussion:

H5 There is a positive relationship between WC and profitability of Indian listed companies under the period from 2011 to 2018.

3 Research methodology

3.1 Sample selection

The objective of this investigation is to find out the factors that affecting the profitability of firms listed on BSE in India for eight years' period from 2011 to 2018. The research

uses static models (pooled, fixed and random effect) models. A sample of 1308 companies was selected among 5,129 firms listed on BSE in India. Profitability (ROE and EPS) are the dependent variables, while liquidity, leverage, company efficiency, company size, and WC were considered as independent variables. This study is based on secondary. The data collected from ProwessQI database.

Table 1 Measurement of variables

Variables	*Notation*	*Measurement*	*Expect effect*	*Data source*	*Supported studies*
Dependent variable					
Profitability	ROE	Returning on equity	NA	ProwessQI Database	Nawafly and Alarussi (2016), Malichov and Mária (2015), Trad et al. (2017), Bouzgarrou et al. (2017), Yasser et al. (2011), Ferreira et al. (2018), Alarussi and Alhaderi (2018), Abbas et al. (2014), Jedidia (2016), Almaqtari et al. (2018), and Homaidi et al. (2019)
	EPS	Earnings per share	NA	ProwessQI Database	
Independent variable					
Liquidity	CR	Current ratio	±	ProwessQI Database	Moin (2008), Almajali et al. (2012), Omondi and Muturi (2013), Abbas et al. (2014), Singh and Sharma (2016), Chen et al. (2017), Al-Homaidi et al. (2019, 2018) and Alarussi and Alhaderi (2018)
Leverage	LEV	Debt equity ratio	±	ProwessQI Database	Almajali et al. (2012), Deitiana and Habibuw (2015), Xu and Banchuenvijit (2015), Mandiefe (2016), Olowokure et al. (2016), Chen et al. (2017) and Alarussi and Alhaderi (2018)
Company efficiency	CEFF	Assets turnover ratio	+	ProwessQI Database	Alarussi and Alhaderi (2018), Innocent et al. (2013), Selling and Stickney (1989), Reed and Reed (1989) and Fairfield and Yohn (2001)
Firm size	FSIZE	Total FSIZE	±	ProwessQI Database	Alarussi and Alhaderi (2018), Alanazi et al. (2011), Olowokure et al. (2016) and Olson and Zoubi (2017)
Working capital	WC	Current asset – current liabilities	+	ProwessQI Database	Alarussi and Alhaderi (2018), Alipour (2011), Malik (2011) and Burja (2011)

In this research, firms' profitability (ROE and EPS) has been used a dependent variable, while liquidity ratio, leverage ratio, company efficiency, firm size, and WC have been used independent variables. Regression analysis was adopted to examine the data to find the outcomes. Two models regression were evaluated in the paper and both assessed profitability of Indian listed companies as follows:

$$ROE_{it} = \beta_0 + \beta_1 CSIZE_1 + \beta_2 WC_2 + \beta_3 CEFF_3 + \beta_4 CR_4 + \beta_4 LEV_4 + \varepsilon \quad (1)$$

$$EPS_{it} = \beta_0 + \beta_1 CSIZE_1 + \beta_2 WC_2 + \beta_3 CEFF_3 + \beta_4 CR_4 + \beta_4 LEV_4 + \varepsilon \quad (2)$$

where

Profitability	ROE_{it} and EPS_{it}.
β	constant coefficient
$CSIZE_1$	company's size, calculated by the logarithm of total assets
WC_2	WC, defined by current asset – current liabilities
$CEFF_3$	company efficiency, measured by assets turnover ratio
CR_4	liquidity ratio, measured by the current assets to current liabilities
LEV_5	leverage ratio, measured by debt to equity ratio
ε	error term.

Following is a Table 1 which summarises variables definition, the expected sign, and source of data.

4 Discussion of results

4.1 Descriptive statistics

Table 3 presents the outcomes of descriptive analysis of the present research for the time period from 2011 to 2018. The mean value is 6.471 for ROE and 1,993.33 for EPS. The maximum values of ROE and EPS are 1200.00 and 336120.0, whereas the minimum values are –17,400.00 and –121,779.40, respectively. The results showed that there is a divergence between the mean values and std. dev. of each independent indicators. For independent variables, the mean value of CR is 2.660, LEV, CEFF, FSIZE, and WC are 1.249%, 162.337%, 24,317.68%, and 3,741.61% with std. dev. of 9.873%, 2,568.81%, 179,400.90%, and 27,628.23%, respectively.

4.2 Correlation matrix

Table 5 reveals the results of correlation matrix and multicollinearity diagnostics for the variables in the current research. The outcomes describe that there is a negative and positive association between independent and dependent variables of the study. The results show that there is a positive correlation between CEFF, FSIZE, and WC and both ROE and EPS. Where CR and LEV have a negative correlation with both ROE and EPS.

The findings are not similar to Oliveira et al. (2011) and Mandiefe (2016) who revealed that there is a significant effect among leverage ratio and firms' financial performance.

All independent proxies have a bad correlation revealing that this study lacks multicollinearity problems. Variance inflation factor (VIF) test is conducted to test multicollinearity problems for more confident assessment. As disclosed in Table 5 Panel B, VIF values for all proxies do not range 6.33 which reveals absence of multicollinearity problem between autonomous indices.

Table 2 Descriptive statistics

Variables	*Obs. no.*	*Mean*	*Median*	*Maximum*	*Minimum*	*Std. dev.*
ROE	10,439	6.471	8.540	1,200.00	–17,400.00	172.76
EPS	10,440	1,993.33	62.900	336,120.00	–121,779.40	13,546.50
CR	10,445	2.660	1.260	964.000	0.000	19.894
LEV	10,441	1.249	0.570	664.750	0.000	9.873
CEFF	10,320	162.337	16.825	166,256.30	–1.130	2,568.81
FSIZE	10,442	24,317.68	2393.90	5,237,809.00	–21.100	179,400.90
WC	10,464	3,741.61	231.00	677,140.00	–658,170.00	27,628.23

Notes: ROE is the return on equity of bank calculated by net profit to total equity (%), EPS is the ratio of earnings per share (%), LOGAS is the natural logarithm of total assets (%), CR is the liquidity defined by current ratio (%), LEV is the leverage calculated by debt to equity ratio (%), CEFF is the company efficiency calculated by assets turnover ratio (%), and WC is the working capital measured by current asset – current liabilities ratio (%).

Table 3 Correlation matrix and multicollinearity diagnostics

Variables	*ROE*	*EPS*	*CR*	*LEV*	*CEFF*	*FSIZE*	*WC*
Correlation matrix (Panel A)							
ROE	1.000						
EPS	0.089	1.000					
CR	–0.016	–0.005	1.000				
LEV	–0.259	–0.017	–0.010	1.000			
CEFF	0.064	0.323	–0.001	–0.003	1.000		
FSIZE	0.027	0.581	–0.010	–0.001	0.067	1.000	
WC	0.057	0.464	0.002	–0.017	0.299	0.310	1.000
Multicollinearity diagnostics (Panel B)							
Variance inflation factor (VIF)			1.019	1.016	1.103	1.128	1.234

Notes: ROE is the return on equity of bank calculated by net profit to total equity (%), EPS is the ratio of earnings per share (%), LOGAS is the natural logarithm of total assets (%), CR is the liquidity defined by current ratio (%), LEV is the leverage calculated by debt to equity ratio (%),CEFF is the company efficiency calculated by assets turnover ratio (%), and WC is the working capital measured by Current asset – current liabilities ratio (%).

4.3 Regression analysis

Table 6 shows the outcomes of regressions analysis between dependent and independent variables of the present research. With regard to ROE and EPS models, the adjusted R-squared of fixed effect models is 36% and 86% respectively. This suggests that independent variables contribute about 36% and 86% of the variation in (ROE and EPS). The outcomes are present as follows.

4.3.1 Liquidity (LQD)

Liquidity ratio has a negative and insignificant influence on firms' profitability defined by ROE and EPS. The outcomes are inconsistent with some of prior studies, e.g., Edi and Binti (2010) who suggested that liquidity ratio has a significant relationship with firms' profitability. Deitiana and Habibuw (2015) found that liquidity ratio has no influence on firms' profitability. Masood and Ashraf (2012) indicated that liquidity has a negative influence on profitability. Moin (2008) revealed that liquidity ratio has no significant influence on banks' profitability.

4.3.2 Leverage (LEV)

The findings of the present paper reveal that leverage ratio has a statistically negative and significant influence on ROE at the level of 1% (p-value < 0.01). The outcomes also indicated that leverage ratio has a positive but insignificant association with firms' profitability defined by EPS. The outcomes supported with Oliveira et al. (2011), Xu and Banchuenvijit (2015) and Mandiefe (2016) who revealed that leverage ratio has a significant effect on firms' profitability.

4.3.3 Company efficiency (CEFF)

The outcomes show that company efficiency ratio has a positive and significant influence on ROE at the level of 1 %. Company efficiency also shows that there is a statistically positive and significant influence on EPS at the level of 1%. The results are not similar with Innocent et al. (2013) who found that there is a negative and insignificant association with firms' financial performance, but similarly by Warrad and Al Omari (2015) who revealed that there is a significant impact on firms' profitability. The results also supported by Alarussi and Alhaderi (2018) who revealed that company efficiency has a positive correlation with firms' profitability.

4.3.4 Firm size (FSIZE)

The outcomes show that firm size has a positive and significant influence on ROE at the level of 1% (p-value < 0.01). The outcomes also reveal that firm size has a positive and significant influence on EPS. The findings are consistent with Alarussi and Alhaderi (2018) who suggested firm size has a positive correlation with firms' profitability in Malaysia. Athanasoglou et al. (2008) reported that the rise in company size growth profitability. Amato and Burson (2007) reported that firm size has a good relationship with firms' performance.

Table 4 Regression results of determinants and profitability

Panel A: Regression analysis (ROE)									
Variables	*Pooled*			*Fixed*			*Random*		
	Coeff.	*t.*	*Prob.*	*Coeff.*	*t.*	*Prob.*	*Coeff.*	*t.*	*Prob.*
Constant	–5.942	–5.038	0.000***	–30.400	–5.474	0.000***	–7.866	–4.500	0.000***
Liquidity	–0.017	–0.636	0.525	–0.018	–0.741	0.458	–0.017	–0.740	0.459
Leverage	–0.765	–29.46	0.000***	–0.519	–21.28	0.000***	–0.605	–25.68	0.000***
Company efficiency	0.001	5.468	0.000***	0.001	5.646	0.000***	0.001	5.893	0.000***
Firm size	1.781	12.140	0.000***	4.850	6.884	0.000***	1.999	9.247	0.000***
Working capital	0.000	0.786	0.432	0.000	–0.813	0.416	0.000	–0.283	0.777
No. of observations		10439			10439			10439	
R-squared		0.106			0.453			0.079	
Adjusted R-squared		0.106			0.361			0.078	
F-statistic		214.87			4.927			154.73	
Prob (F-statistic)		0.000			0.000			0.000	
Hausman test					0.000				
Panel B: Regression analysis (EPS)									
Variables	*Pooled*			*Fixed*			*Random*		
	Coeff.	*t.*	*Prob.*	*Coeff.*	*t.*	*Prob.*	*Coeff.*	*t.*	*Prob.*
Constant	–11664.2	–23.91	0.000***	–1485.8	–1.401	0.161	–9321.1	–11.83	0.000***
Liquidity	14.426	2.415	0.016***	1.517	0.396	0.692	2.901	0.774	0.439
Leverage	–17.371	–1.537	0.124	–3.319	–0.613	0.540	–3.342	–0.620	0.536
Company efficiency	1.074	23.473	0.000***	0.742	23.639	0.000***	0.796	26.080	0.000***
Firm size	1637.43	26.958	0.000***	453.26	3.357	0.001***	1441.40	15.130	0.000***
Working capital	0.169	38.742	0.000***	–0.048	–16.66	0.000***	–0.028	–10.02	0.000***
No. of observations		10439			10439			10439	
R-squared		0.302			0.883			0.077	
Adjusted R-squared		0.302			0.867			0.076	
F-statistic		891.43			52.647			171.79	
Prob (F-statistic)		0.000			0.000			0.000	
Hausman test					0.000				

Notes: ***Significant in less than 1%.

Table 5 Robustness regression

Variables	*Return on assets (ROE)*					
	Pooled			*Robust regression*		
	Coeff.	*t.*	*Prob.*	*Coeff.*	*t.*	*Prob.*
Constant	–5.942	–5.038	0.000***	–5.240	–10.89	0.000***
Liquidity	–0.017	–0.636	0.525	0.002	0.178	0.858
Leverage	–0.765	–29.47	0.000***	–0.862	–81.35	0.000***
Company efficiency	0.001	5.468	0.000***	0.000	4.427	0.000***
Firm size	1.781	12.14	0.000***	1.891	31.59	0.000***
Working capital	0.000	0.786	0.432	0.000	–0.242	0.809
No. of observations		10439			10439	
R-squared		0.106			0.074	
Adjusted R-squared		0.106			0.073	
Prob (F-statistic)		0.000			0.000	
Variables	*Earnings per shares (EPS)*					
	Pooled			*Robust regression*		
	Coeff.	*t.*	*Prob.*	*Coeff.*	*t.*	*Prob.*
Constant	–11,664.23	–23.910	0.000***	–166.16	–31.543	0.000***
Liquidity	14.426	2.415	0.016***	0.014	0.225	0.822
Leverage	–17.371	–1.537	0.124	–0.171	–1.403	0.161
Company efficiency	1.074	23.473	0.000***	0.016	32.334	0.000***
Firm size	1637.43	26.958	0.000***	26.966	41.111	0.000***
Working capital	0.169	38.742	0.000***	0.197	4188.42	0.000***
No. of observations		10439			10439	
R-squared		0.302			0.116	
Adjusted R-squared		0.302			0.115	
Prob (F-statistic)		0.000			0.000	

Notes: ***, **Significant at 1% and 5% respectively.

4.3.5 Working capital

The results show that WC has a positive but insignificant influence on ROE. WC also showed a statistically negative and significant influence on EPS at the level of 1% (p-value < 0.01). The results supported by Grinyer and McKiernan (1991) and Alipour

(2011) who revealed that WC has a significant influence on firms' profitability. The outcomes are also consistent with Dong and Su (2010) who found that WC has a negative association with firms' performance. The outcomes are also similarly by Alarussi and Alhaderi (2018) who indicated that WC has a positive impact on firms' profitability.

Hausman test is used to select the proper estimation method; fixed or random effect models. The findings of Hausman test reveal that the fixed effect model is more suitable than the random effects model because the p-value is less than 5% (p-value < 0.05%) in both models ROE and EPS.

4.4 Robust regression

The results of robust regression are a similarity to ordinary least squares (OLS) regression model. Coefficient estimates in case of robust regression are not highly deviated from the OLS regression. This shows a proper estimation of the regression assumptions. The results of robust regression also indicate that data is not contaminated with outliers. Further, there are no influential observations that affect the estimated results.

5 Conclusions

The current study examined the factors affecting the profitability of Indian listed companies over the period from 2011 to 2018. The research uses static (pooled, fixed and random effect) models. A sample of 1308 companies was selected among 5129 firms listed on BSE in India. ROE and earning per share (EPS) as a dependent variable. Liquidity, leverage, company efficiency, firm size, and WC were considered as independent variables.

The outcomes of the study show that leverage ratio, company efficiency, and firm size have a strong relationship with profitability measured by ROE. The results also revealed that company efficiency and firm size have a positive association with profitability defined by ROE and EPS. The present study represents an interesting insight into the factors affecting the profitability of listed firms' profitability in India. Few empirical studies have investigated this issue in India. However, this research is the first to the best of the author's understanding attempt to investigate this issue using different statistical tools of analysis and panel data of the listed companies in India which have not been considered by prior studies. Thus, this study tries to bridge an existing gap in the body of literature of firms' profitability in India.

References

Abbas, Q., Hunjra, A.I., Azam, R.I., Ijaz, M.S. and Zahid, M. (2014) 'Financial performance of banks in Pakistan after merger and acquisition', *Journal of Global Entrepreneurship Research*, Vol. 4, No. 1, p.13, https://doi.org/10.1186/s40497-014-0013-4.

Akinlo, O. and Asaolu, T. (2012) 'Profitability and leverage: evidence from Nigerian firms', *Global Journal of Business Research*, Vol. 6, No. 1, pp.17–25.

Alanazi, A.S., Liu, B. and Forster, J. (2011) 'The financial performance of Saudi Arabian IPOs', *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 4, No. 2, pp.146–157, https://doi.org/10.1108/17538391111144533.

Alarussi, A.S. and Alhaderi, S.M. (2018) 'Factors affecting profitability in Malaysia', *Journal of Economic Studies*, Vol. 45, No. 3, pp.442–458, https://doi.org/10.1108/JES-05-2017-0124.

Al-Homaidi, E.A., Tabash, M.I., Farhan, N.H. and Almaqtari, F.A. (2019) 'The determinants of liquidity of Indian listed commercial banks: a panel data approach', *Cogent Economics & Finance*, Vol. 7, No. 1, pp.1–20, https://doi.org/10.1080/23322039.2019.1616521.

Al-Homaidi, E.A., Tabash, M.I., Farhan, N.H.S. and Almaqtari, F.A. (2018) 'Bank-specific and macro-economic determinants of profitability of Indian commercial banks: a panel data approach', *Cogent Economics & Finance*, Vol. 6, No. 1, pp.1–26, https://doi.org/10.1080/23322039.2018.1548072.

Alipour, M. (2011) 'Working capital management and corporate profitability: evidence from Iran', *World Applied Sciences Journal*, Vol. 12, No. 7, pp.1093–1099.

Almajali, A.Y., Alamro, S.A. and Al-Soub, Y.Z. (2012) 'Factors affecting the financial performance of Jordanian insurance companies listed at Amman Stock Exchange', *Journal of Management Research*, Vol. 4, No. 2, pp.266–289, https://doi.org/10.5296/jmr.v4i2.1482.

Almaqtari, F.A., Al-Homaidi, E.A., Tabash, M.I. and Farhan, N.H. (2018) 'The determinants of profitability of Indian commercial banks: a panel data approach', *International Journal of Finance & Economics*, Vol. 24, No. 1, pp.168–185, https://doi.org/10.1002/ijfe.1655.

Amato, L. and Wilder, R.P. (1985) 'The effects of firm size on profit rates in U.S. manufacturings', *Southern Economic Journal*, Vol. 52, No. 1, pp.182–190.

Amato, L.H. and Burson, T. E. (2007) 'The effects of firm size on profit rates in financial services', *Journal of Economics and Economic Education Research*, Vol. 8, No. 1, pp.67–82.

Athanasoglou, P.P., Brissimis, S.N. and Delis, M.D. (2008) 'Bank-specific, industry-specific and macroeconomic determinants of bank profitability', *Int. Fin. Markets, Inst. and Money*, Vol. 18, pp.121–136, https://doi.org/10.1016/j.intfin.2006.07.001.

Ben Selma Mokni, R. and Rachdi, H. (2014) 'Assessing the bank profitability in the MENA region', *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 7, No. 3, pp.305–332, https://doi.org/10.1108/IMEFM-03-2013-0031.

Bouzgarrou, H., Jouida, S. and Louhichi, W. (2017) 'Bank profitability during and before the financial crisis: domestic vs. foreign banks', *Research in International Business and Finance*, https://doi.org/10.1016/j.ribaf.2017.05.011.

Burca, A-M. and Batrinca, G. (2014) 'The determinants of financial performance in the Romanian insurance market', *International Journal of Academic Research in Accounting, Finance and Management Sciences*, Vol. 4, No. 1, pp.299–308, https://doi.org/10.6007/IJARAFMS/v4-i1/637.

Burja, C. (2011) 'Factors influencing the company's profitability', *Annales Universitatis Apulensis Series Oeconomica*, Vol. 13, No. 2, pp.215–224.

Chandra, T., Junaedi, A., Wijaya, E., Suharti, S., Mimelientesa, I. and Ng, M. (2019) 'The effect of capital structure on profitability and stock returns: empirical analysis of firms listed in Kompas 100', *Journal of Chinese Economic and Foreign Trade Studies*, Vol. 12, No. 2, pp.74–89, https://doi.org/10.1108/JCEFTS-11-2018-0042.

Charumathi, B. (2012) 'On the determinants of profitability of Indian life insurers: an empirical study', *Proceedings of the World Congress on Engineering*, London, 4–6 July, Vol. 1.

Chen, S., Chen, M. and Wei, H. (2017) 'Financial performance of Chinese airlines: does state ownership?', *Journal of Hospitality and Tourism Management*, Vol. 33, pp.1–10, https://doi.org/10.1016/j.jhtm.2017.08.001.

Chinoda, T. (2014) 'The determinants of commercial banks profitability in Zimbabwe (2009–2014)', *Journal of Economics and Finance (IOSR-JEF)*, Vol. 5, No. 6, pp.69–80.

Chowdhury, A. and Amin, M.M. (2007) 'Working capital management practiced in pharmaceutical companies listed in Dhaka stock exchange', *BRAC University Journal*, Vol. 4, No. 2, pp.75–86.

Das, C.P. and Swain, R.K. (2017) 'Impact of organizational factors on financial performance', *Parikalpana – KIIT Journal of Management*, Vol. 13, No. 2, pp.151–159.

Deitiana, T. and Habibuw, L.G. (2015) 'Factors affecting the financial performance of property and real estate companies listed at Indonesia Stock Exchange', *Asian Business Review*, Vol. 5, No. 11, pp.2304–2613.

Demirhan, H.G. and Anwar, W. (2014) 'Factors affecting the financial performance of the firms during the financial crisis: evidence from Turkey', *Ege Strategic Research Journal*, Vol. 5, No. 1, pp.65–80.

Dey, N.B., Adhikari, K. and Bardhan, M.R. (2015) 'Factors determining the financial performance of life insurance companies in India – an empirical study', *ERPA International Journal of Economic and Business Review*, Vol. 3, No. 8, pp.42–48.

Dietrich, A. and Wanzenried, G. (2014) 'The determinants of commercial banking profitability in low-, middle-, and high-income countries', *Quarterly Review of Economics and Finance*, Vol. 54, No. 3, pp.337–354, https://doi.org/10.1016/j.qref.2014.03.001.

Dong, H. and Su, J. (2010) 'The relationship between working capital management and profitability: a Vietnam case', *International Research Journal of Finance and Economics*, Vol. 49, No. 1, pp.59–67.

Edi, N. and Binti, A. (2010) 'Working capital management: the effect of market valuation and profitability in Malaysia', *International Journal of Business and Management*, Vol. 5, No. 11, pp.140–147.

Fairfield, P. and Yohn, T. (2001) 'Using asset turnover and profit margin to forecast changes in profitability', *Review of Accounting Studies*, Vol. 6, No. 4, pp.371–385.

Ferreira, H., Mendonça, D. and Bernardo, R. (2018) 'Effect of banking and macroeconomic variables on systemic risk: an application of ΔCOVAR for an emerging economy', *North American Journal of Economics and Finance*, Vol. 43, pp.141–157, https://doi.org/10.1016/j.najef.2017.10.011.

Ganguli, S.K. (2016) 'Persistent high liquidity, ownership structure and firm performance: Indian evidence', *Corporate Ownership & Control*, Vol. 14, No. 1, pp.38–65.

Ghosh, S. (2006) 'Do board characteristics affect corporate performance? Firm-level evidence for India', *Applied Economics Letters*, Vol. 13, No. 7, pp.435–443.

Grinyer, H.P. and McKiernan, P. (1991) 'The determinants of corporate profitability in the UK electrical engineering industry', *British Journal of Management*, Vol. 2, No. 1, pp.17–32.

Homaidi, E.A.A., Almaqtari, F.A., Ahmad, A. and Tabash, M.A. (2019) 'Impact of corporate governance mechanisms on financial performance of hotel companies: empirical evidence from India', *African Journal of Hospitality, Tourism and Leisure*, Vol. 8, No. 2, pp.1–21.

Howard, B.B. and Upton, M. (1961) *Introduction to Business Finance*, McGraw Hill, New York.

Innocent, E.C., Mary, O.I. and Matthew, O.M. (2013) 'Financial ratio analysis as a determinant of profitability in Nigerian pharmaceutical industry', *International Journal of Business and Management*, Vol. 8, No. 8, pp.107–117.

Issn, V.O.L.N.O., Ebenezer, O.O., Ahmad, W. and Bin, W. (2017) 'Bank specific and macroeconomic determinants of commercial bank profitability: empirical evidence from Nigeria', *Journal of Finance and Banking Studies*, Vol. 6, No. 1, pp.25–38.

Jackling, B. and Johl, S. (2009) 'Board structure and firm performance: evidence from India's top companies', *Corporate Governance: An International Review*, Vol. 17, No. 4, pp.492–509, https://doi.org/10.1111/j.1467-8683.2009.00760.x.

Jedidia, K.B. (2016) 'Is Islamic bank profitability driven by same forces as conventional banks?', *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 9, No. 1, pp.46–66, https://doi.org/10.1108/IMEFM-12-2014-0120.

Kuntluru, S., Muppani, V.R. and Khan, M.A.A. (2008) 'Financial performance of foreign and domestic owned companies in India', *Journal of Asia-Pacific Business*, Vol. 9, No. 1, pp.28–54.

Malichov, E. and Mária, Ď. (2015) 'Evaluation of financial performance of enterprises in IT sector', *Procedia Economics and Finance*, Vol. 34, No. 15, pp.238–243, https://doi.org/10.1016/S2212-5671(15)01625-1.

Malik, H. (2011) 'Determinants of insurance companies profitability: an analysis of insurance sector of Pakistan', *Academic Research International*, Vol. 1, No. 3, pp.315–321.

Mandiefe, S.P. (2016) 'How working capital affects the profitability of deposit money banks: case of Afriland Cameroon', *Arabian Journal of Business and Management Review*, Vol. 6, No. 46, pp.1–9.

Masood, O. and Ashraf, M. (2012) 'Bank-specific and macroeconomic profitability determinants of Islamic banks', *Qualitative Research in Financial Markets*, Vol. 4, Nos. 2/3, pp.255–268, https://doi.org/10.1108/17554171211252565.

Matar, A. and Eneizan, B.M. (2018) 'Determinants of financial performance in the industrial firms: evidence from Jordan', *Asian Journal of Agricultural Extension, Economics & Sociology*, Vol. 22, No. 1, pp.1–10, DOI: 10.9734/AJAEES/2018/37476.

Mauwa, J. (2016) *Determinants of Financial Performance of Firms Listed on the Rwanda Stock Exchange*, Jomo Kenyatta University of Agriculture and Technology, Juja.

Menicucci, E. and Paolucci, G. (2016) 'The determinants of bank profitability: empirical evidence from European banking sector', *Journal of Financial Reporting and Accounting*, Vol. 14, No. 1, pp.86–115, https://doi.org/10.1108/JFRA-05-2015-0060.

Mishra, S. and Suar, D. (2010) 'Does corporate social responsibility influence firm performance of Indian companies?', *Journal of Business Ethics*, Vol. 95, No. 4, pp.571–601.

Mohd Zaid, N.A., Wan Ibrahim, W.M.F. and Zulqernain, N.S. (2014) 'The determinants of profitability: evidence from Malaysian construction companies', Paper presented at the *Proceedings of 5th Asia-Pacific Business Research Conference*, Kuala Lumpur, Vols. 17–18, pp.1–13.

Moin, M.S. (2008) *Performance of Islamic Banking and Conventional Banking in Pakistan: A Comparative Study*, Master Degree Project, School of Technology and Society, University of Skövde.

Nawafly, A.T. and Alarussi, A.S. (2016) 'Impact of board's characteristics, audit committee characteristics over firm performance', *International Conference on Accounting Studies (ICAS)*, Langkawi, Kedah, 15–18 August.

Oliveira, J., Rodrigues, L.L. and Craig, R. (2011) 'Risk-related disclosures by non-finance companies: Portuguese practices and discloser characteristics', *Managerial Auditing Journal*, Vol. 26, No. 9, pp.817–839.

Olowokure, O.A., Tanko, M. and Nyor, T. (2016) 'Firm structural characteristics and financial reporting quality of listed deposit money banks in Nigeria', *International Business Research*, Vol. 9, No. 1, pp.106–123, https://doi.org/10.5539/ibr.v9n1p106.

Olson, D. and Zoubi, T. (2017) 'Convergence in bank performance for commercial and Islamic banks during and after the global financial crisis', *Quarterly Review of Economics and Finance*, Vol. 65, pp.71–87, https://doi.org/10.1016/j.qref.2016.06.013.

Omondi, M.M. and Muturi, W. (2013) 'Factors affecting the financial performance of listed companies at the Nairobi Securities Exchange in Kenya', *Research Journal of Finance and Accounting*, Vol. 4, No. 15, pp.99–104.

Ongore, V.O. and Kusa, G.B. (2013) 'Determinants of financial performance of commercial banks in Kenya', *International Journal of Economics and Financial Issues*, Vol. 3, No. 1, pp.237–252, https://doi.org/10.15520/jbme.2015.vol3.iss11.158.pp33-40.

Pandey, I.M. (2007) *Financial Management*, 9th ed., Vikas Publishing House Ltd., New Delhi.

Ravan, S.V. (2014) 'Impact of LPG on Indian economy Sanket', *Prime International Research Journal*, Vol. 1, No. 4, pp.21–33, https://doi.org/10.5958/2249-877x.2017.00032.7

Reed, R. and Reed, M. (1989) 'CEO experience and diversification strategy fit', *Journal of Management Studies*, Vol. 26, No. 3, pp.251–270.

Selling, T.I. and Stickney, C.P. (1989) 'The effects of business environment and strategy on a firm's rate of return on assets', *Financial Analysts Journal*, Vol. 45, No. 1, pp.43–68.

Sidhu, H. and Bhatia, G. (1993) 'Factors affecting profitability in Indian textile industry', *Indian Economic Journal*, Vol. 41, No. 2, pp.137–143.

Singh, A. and Sharma, A.K. (2016) 'An empirical analysis of macroeconomic and bank-specific factors affecting liquidity of Indian banks', *Future Business Journal*, Vol. 2, No. 1, pp.40–53, https://doi.org/10.1016/j.fbj.2016.01.001.

Thomas, B. (2011) *A Study of Competitiveness of Industries in Kerala to Meet the Challenges of Liberalised Economy*, Doctoral dissertation, Mahatma Gandhi University, Shodhganga.

Trad, N., Trabelsi, M.A. and Goux, J.F. (2017) 'Risk and profitability of Islamic banks: a religious deception or an alternative solution?', *European Research on Management and Business Economics*, Vol. 23, No. 1, pp.40–45, https://doi.org/10.1016/j.iedeen.2016.09.001.

Warrad, L. and Al Omari, R. (2015) 'The impact of turnover ratios on Jordanian services sectors' performance', *Journal of Modern Accounting and Auditing*, Vol. 11, No. 2, pp.77–85.

Xu, M. and Banchuenvijit, W. (2015) 'Factors affecting financial performance of firms listed on Shanghai Stock Exchange (SSE 50)', *International Journal of Business and Economic*, Vol. 6, No. 2, pp.45–61.

Yasser, Q.R., Entebang, H. and Mansor, S.A. (2011) 'Corporate governance and firm performance in Pakistan: the case of Karachi Stock Exchange (KSE)-30', *Journal of Economics and International Finance*, Vol. 3, No. 8, pp.482–491.