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Asian Journal of Accounting Research (AJAR) provides a forum for international researchers to publish the original articles. The area of interest are accounting research such as, but not limited to, accounting, corporate governance, tax.
Macroeconomic factors, firm characteristics and financial performance
A study of selected quoted manufacturing firms in Nigeria
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Abstract
Purpose – The purpose of this paper is to explore the interrelationship between macroeconomic factors, firm characteristics and financial performance of quoted manufacturing firms in Nigeria. Specifically, the study investigates the effect of interest rate, inflation rate, exchange rate and the gross domestic product (GDP) growth rate, while the firm characteristics were size, leverage and liquidity. The dependent variable financial performance is measured as return on assets (ROA).
Design/methodology/approach – The study used the ex post facto research design. The population comprised all quoted manufacturing firms on the Nigerian Stock Exchange. The sample was restricted to companies in the consumer goods sector, selected using non-probability sampling method. The study used multiple linear regression as the method of validating the hypotheses.
Findings – The study finds no significant effect for interest rate and exchange rate, but a significant effect for inflation rate and GDP growth rate on ROA. Second, the firm characteristics showed that firm size, leverage and liquidity were significant.
Practical implications – The study has implications for regulators and policy makers in formulating policy decisions. In addition, managers may better understand the interplay between macroeconomic factors, firm characteristics and profitability of firms.
Originality/value – Few studies have addressed the interplay of macroeconomic factors and firm characteristics in determining the profitability of manufacturing firms in the country and developing countries in general.
Keywords Nigeria, Financial performance, Manufacturing firms, Firm characteristics, Macroeconomic
Paper type Research paper

1. Background of the study
Micro and macroeconomic factors affect the performance of a firm. Microeconomic factors exist within the company and under the control of management; they include product, organizational culture, leadership, manufacturing (quality), demand and factors of production (Broadstock et al., 2011; Adidu and Olanye, 2006). Macroeconomic factors exist outside the company and not under the control of management; they include social, environmental, political conditions, suppliers, competitors, government regulations and policies (Adidu and Olanye, 2006). Key economic factors include the Consumer Price Index (CPI), unemployment, gross domestic product (GDP), stock market index, corporate tax rate and interest rates (World Bank Group, 2015; Broadstock et al., 2011). These factors
(i.e. macro) can pose a positive or negative threat to the performance of a firm. While micro factors are within the control of management, the macro factors are beyond the control of management (Dioha et al., 2018).

This was evidenced from the crises in Latin America, East Asia, Russia and the global financial crisis in 2007 (Issah and Antwi, 2017). And presently, the recession witnessed in Nigeria, which business analysts opined that led to the delisting of some companies, has brought to limelight the implications of macroeconomic factors on corporate performance (Zeitun et al., 2007).

For instance, the monetary policy of a country affects all sectors through the cost of debt and the availability of money/credit, which could affect a firm’s ability to access external sources of fund. Fiscal policies affect a firm’s after tax net cash flow, its cost of capital, and potentially the demand for its products, and survival (Zeitun et al., 2007). Also, increases in the nominal interest rate and inflation rate intensify the aggregate rates of failure or default (Robson, 1996; Davis, 1995; Wadhwani, 1986). In most developing countries, for instance Nigeria, macroeconomic factors, such as hyperinflation and increasing exchange rates, are some of the factors affecting the performance of manufacturing firms (Owolabi, 2017).

However, the performance of a firm is not affected by macroeconomic factors. According to the resource-based view (RBV), the internal attributes of an organization determine its position in the competitive environment (Denizel and Özdemir, 2006). The attributes of a firm’s physical, human and organizational capital enable the firm conceive of and implement strategies that improve its efficiency and effectiveness (Barney, 1991). Industry and corporate specific factors have been shown to be significant determinants of corporate performance (Oyebanji, 2015; Rajkumar, 2014; Akinyomi, 2013; Akintoye, 2008).

The subject of financial performance has received significant attention from scholars (Kaguri, 2013). It has been of primary concern to various stakeholders in all forms of businesses because of its implications on organizational health and ultimate survival. Therefore, its measurement and determining factors have gained increased attention, more especially in developing countries in the area of business and corporate finance literature (Dioha et al., 2018). High performance reflects management effectiveness and efficiency in making use of company’s resources and this, in turn, contributes to the country’s economy at large (Naser and Mokhtar, 2004).

2. Statement of the problem
Firms make several operational and strategic decisions which are usually moderated by the macroeconomic environment; these include financing decision, investing decision and operational decision (Owolabi, 2017). Thus, performance is often gauged from stability in the macro economy, such as exchange rate and inflation rate fluctuations, the CPI, level of government expenditure, interest rates, among others. However, macroeconomic volatility is much higher in developing countries than developed ones (Owolabi, 2017). For instance, the Nigerian economy has shown volatility in exchange rate, inflation, interest rate, among several others (Agu et al., 2014; Ogbole et al., 2011). Analysts opine that growth in the manufacturing sector is hindered negatively from high lending rates, which invariably is responsible for high cost of production (Rasheed, 2010).

Studies have extensively examined the effect of macroeconomic factors on firm performance in developed countries (Barakat et al., 2016; Broadstock et al., 2011; Kandir, 2008; Stock and Watson, 2008; Ibrahim and Aziz, 2003). However, there is little empirical evidence how macroeconomic variables impact on the performance of manufacturing firms in Nigeria (Owolabi, 2017).

In Nigeria, major macroeconomic indicators have shown significant fluctuations over time, more especially as the country emerges from recession. For instance, inflation rate as measured by the CPI is presently at double-digit level 14.33 as at February 2018.
Exchange rate increased tremendously from to over 300 as at April 2018. In a communiqué issued in April 2018, the Central Bank of Nigeria (CBN) Governor Mr Godwin Emefiele raised its money supply growth forecast for 2018 to 10.98 percent. The CBN had earlier projected a money supply growth of 10.29 percent for 2018 (Vanguard, 2018). The GDP at current basic prices has also steadily increased. Studies have extensively focused on the banking sector (Ogunbiyi and Ihejirika, 2014; Osamwonyi and Michael, 2014).

However, survival and growth of firms also depend on interaction of macroeconomic factors and firm characteristics. Using data from nine African countries, Lemma and Negash (2013) found evidence that income level, growth rate and inflation influence the capital structure of firms. However, this is further affected by industry- and firm-specific characteristics. Ghareri and Mohammadi (2016) reported mixed findings for the effect of firm-specific characteristics on financial reporting quality. Studies have also substantiated the effect of firm characteristics on financial performance (Dioha et al., 2018). For instance, firm characteristics such as firm age (Swiss, 2008), firm size (Malik, 2011), liquidity (Dogan, 2013) and leverage (Mule and Mukras, 2015) have been associated with profitability.

The recent study by Foyeke et al. (2015) on a sample of firms from both financial and non-financial sectors in Nigeria revealed a significant positive relationship between financial performance and firm size with the level of corporate governance disclosure. Thus, given the interaction of the two factors in determining performance, there is a need for additional evidence on the joint association between macroeconomic factors, firm characteristics and financial performance in developing countries (Adeoye and Elegunde, 2012). More so, Izedonmi and Abdullahi (2011) have shown that the influence of macroeconomic factors varied from sector to sector. Therefore, there is a need to examine using such firms from the consumer goods sector.

Therefore, the thrust of this study is to examine macroeconomic factors, firm characteristics and financial performance of selected manufacturing companies in Nigeria.

3. **Objective of the study**

The main objective of the study is to explore the interrelationship between macroeconomic factors, firm characteristics and financial performance of quoted manufacturing firms in Nigeria. The study intends to achieve the following specific objectives:

1. to examine the effect of interest rate on return on assets (ROA) of consumer goods manufacturing firms;
2. to ascertain the effect of inflation rate on ROA of consumer goods firms;
3. to examine the effect of exchange rate on ROA of consumer goods manufacturing firms;
4. to determine the effect of GDP growth rate on ROA of consumer goods manufacturing firms;
5. to examine the effect of firm size on ROA of consumer goods manufacturing firms;
6. to analyze the effect of leverage on ROA of consumer goods manufacturing firms; and
7. to analyze the effect of liquidity on ROA of consumer goods manufacturing firms.

4. **Review of related literature**

4.1 **Conceptual framework**

4.1.1 **Macroeconomic factors**. The word “macroeconomics” is derived from the Greek prefix *makro* meaning “large” and economics, and is a branch of economics which deals with the performance, structure, behavior and decision making of the economy as a whole (Sullivan and Sheffrin, 2003). The macro environment looks at forces surrounding a firm
that have the potential to affect the way it operates (Davis and Powell, 2012). The Institute of Chartered Accountants (ICAN) opined that it can be viewed as a set of factors or conditions that are external to the firm but which can influence the operations of the firm.

The macro environment refers to those conditions and forces which are external to the firm and are beyond the individual business unit, but they all operate within it (Taher et al., 2010). Duncan (1972) opined that the external business environment refers to the totality of factors outside an organization that are taken into consideration by an organization in its decision making. These factors depend largely on the complexity and dynamism of the environment (Duncan, 1972; Dess and Beard, 1984). The external business environment is classified as being stable when it does not show any changes, unstable when it shows relative changes and dynamic when it shows changes continuously (Aguilar, 1967).

Studies have indicated changes in the value of financial assets to be responsive to macroeconomic factors such as inflation rate, exchange rate, interest rates, GDP, money supply, unemployment rate, dividends yields and so forth (Fosu et al., 2014). The study focused on the following selected macroeconomic variables: interest rate, inflation, exchange rate, money supply and GDP (Table I).

4.1.1.1 Interest rate. Crowley defined interest rate as the price a borrower pays for the use of money they borrow from a lender or fee paid on borrowed assets. Ngugi (2001) described interest rate as a price of money that reflects market information regarding expected change in the purchasing power of money or future inflation. Economists argue that interest rate is the price of capital allocation over time; monetarist use the interest rate as an important tool to attract more saving, as increases in the interest rates attract more savings and the decrease in interest rate will encourage investors to look for another investment that will generate more return accordingly (Murungi, 2014). That interest rates are important because they control the flow of money in the economy. High interest rates curb inflation but also slow down the economy. Low interest rates stimulate the economy, but could lead to inflation.

The lending interest rate (percent) in Nigeria was reported at 17.58 percent in 2017, according to the World Bank collection of development indicators, compiled from officially recognized sources. The rate was marginally higher than periods prior. In Nigeria, Acha and Acha (2011) examined the implication of interest rates on savings and investment and reported that interest rate was a poor determinant of savings and investment. While Obamuyi and Olorunfemi (2011) proved that financial reform and interest rates had significant impact on economic growth in Nigeria. At the firm level, Khan and Mahmood (2013) showed that the financial structure of some industry makes firms in that industry more susceptible to interest rates volatilities than others. Mnang’at et al. (2016) found a significant relationship between interest rate and financial performance of micro enterprises in Kenya. Barnor (2014) found a significant negative effect of interest rate on stock market returns of listed firms in Ghana.

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP per capita (USD)</th>
<th>GDP (USD billion)</th>
<th>Money (annual variation in %)</th>
<th>Inflation rate (CPI, annual variation in %)</th>
<th>Exchange rate (vs USD)</th>
<th>Policy interest rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>3,082</td>
<td>522</td>
<td>1.3</td>
<td>8.5</td>
<td>155.2</td>
<td>12.00</td>
</tr>
<tr>
<td>2014</td>
<td>3,312</td>
<td>576</td>
<td>20.6</td>
<td>8.1</td>
<td>167.5</td>
<td>13.00</td>
</tr>
<tr>
<td>2015</td>
<td>2,766</td>
<td>494</td>
<td>5.8</td>
<td>9</td>
<td>196.5</td>
<td>11.00</td>
</tr>
<tr>
<td>2016</td>
<td>2,266</td>
<td>405</td>
<td>17.8</td>
<td>15.7</td>
<td>304.5</td>
<td>14.00</td>
</tr>
<tr>
<td>2017</td>
<td>1,995</td>
<td>376</td>
<td>1.7</td>
<td>16.5</td>
<td>305.5</td>
<td>14.00</td>
</tr>
</tbody>
</table>

Source: www.focus-economics.com/countries/nigeria

Table I. Selected macroeconomic variables
4.1.1.2 Inflation rate. Jhingan (2002) defined inflation as a persistent rise in the general level of prices. Akers (2014) stated that inflation rate measures changes in the average price level based on a price index. Inflation can be measured in several ways; however, two commonly used measures are the GDP Deflator or a CPI indicator. The GDP Deflator is a broad index of inflation in the economy; the CPI measures changes in the price level of a broad basket of consumer products. The CPI measures average retail prices that consumers pay. A high or increasing CPI indicates existence of inflation. Higher prices tend to reduce overall consumer spending which, in turn, leads to a decrease in GDP while inflation itself is not negative, rapidly increasing rates of inflation signal the possibility of poor macroeconomic health. Economists distinguish between two types of inflation: demand-pull inflation and cost-push inflation. Demand-pull inflation occurs when aggregate demand for goods and services in an economy rises more rapidly than an economy’s productive capacity. Cost-push inflation, on the other hand, occurs when prices of production process inputs increase. Rapid wage increases or rising raw material prices are common causes of this type of inflation.

Inflation rate is primarily measured in Nigeria as the percentage change in the CPI which has the food and core index, to give the headline inflation. The CPI measures the price of the representative food and services components such as food, alcoholic beverages, energy, housing, clothing, transport, health, communication, transport, etc. (Figure 1).

Several studies have shown a negative effect of inflation on economic growth. For instance, the study by Usman and Adejare (2013) in Nigeria reported a negative relationship between market all share index, market volume and GDP with inflation. Similarly, Alimi (2014) reported a deleterious effect of inflation on financial development; proxied as broad definition of money as ratio of GDP; quasi money as share of GDP; and credit to private sector as share of GDP. The study by Djallrov and Piesse (2016) found a negative relationship with profitability of early transition countries and positive relationship in late transition countries.

4.1.1.3 Exchange rate. According to Business Dictionary, exchange rate is the price for which the currency of a country can be exchanged for another country’s currency. Harvey (2012) described exchange rate as the value of two currencies relative to each other. It is the price of one currency expressed in terms of another currency. It is the price at which the currency of one country can be converted to the currency of another. Exchange rates are either fixed or floating. Fixed exchange rates are decided by central banks of a country,

![Figure 1.](source: www.proshareng.com)
whereas floating exchange rates are decided by the mechanism of market demand and supply (The Economic Times, 2017). Factors that influence exchange rate include: interest rates; inflation rate; trade balance; political stability; internal harmony; general state of economy; and quality of governance.

Martin and Mauer (2003) showed that understanding the impact of foreign exchange risk is a critical element for purposes of firm valuation and risk management. The study by Barlow (2014) found a significant positive effect of exchange rate on stock market returns of listed firms in Ghana.

4.1.1.4 Gross domestic product (GDP). GDP is the total market value of goods and services produced by a country’s economy during a specified period of time. It includes all final goods and services, that is, those that are produced by the economic agents located in that country regardless of their ownership and that are not resold in any form. According to Mwangi (2013), GDP is a most commonly used macroeconomic indicator to measure total economic activity within an economy; its growth rate reflects the state of the economic cycle. It is used throughout the world as the main measure of output and economic activity.

In economics, the final users of goods and services are divided into three main groups: households, businesses and the government. One-way GDP is calculated – known as the expenditure approach – by adding the expenditures made by those three groups of users. Accordingly, GDP is defined by the following formula:

\[
GDP = \text{Consumption} + \text{Investment} + \text{Government spending} + \text{Net exports} \quad [GDP = C + I + G + NX],
\]

where Consumption (C) represents private-consumption expenditures by households and non-profit organizations; Investment (I) refers to business expenditures by businesses and home purchases by households; Government spending (G) denotes expenditures on goods and services by the government; and Net exports (NX) represents a nation’s exports minus its imports. The idea behind the expenditure approach is that the output that is produced in an economy has to be consumed by final users, which are either households, businesses or the government.

Tan and Floros (2012) on a sample of banks in China reported a negative relationship between GDP growth and bank profitability. Sinha and Sharma (2016) also documented a positive relationship between profitability and GDP in India, while Trujillo-Ponce (2013) on a sample of banks in Spain reported a positive impact of GDP growth on ROA and return on equity (ROE).

4.2 Firm characteristics

Zou and Stan (1998) described firm characteristics as a firm’s demographic and managerial variables which, in turn, comprise part of the firm’s internal environment. According to Kogan and Tian (2012), firm characteristics include firm size, leverage, liquidity, sales growth, asset growth and turnover. Others include ownership structure, board characteristics, age of the firm, dividend pay-out, profitability, access to capital markets and growth opportunities (McKnight and Weir, 2008; Subrahmanyam and Titman, 2001):

(1) Firm Size has become dominant in empirical corporate finance studies and has been widely established among the most significant variables (Kioko, 2013). Studies, however, document mixed results on the effect of size, while some confirm (Tarawneh, 2006; Sarkaria and Shergill, 2000); others find mixed or no effect at all (Goddard et al., 2006; Mariuzzo et al., 2003). There is a positive significant relationship between size and profitability (Liargovas and Skandalis, 2008; Akhavein et al., 1997; Smirlock, 1985). More recently, Lopez-Valeiras et al. (2016) revealed that the relationship between size and financial performance is negatively mediated by indebtedness.
(2) Leverage refers to the proportion of debt to equity in the capital structure of a firm (Omondi and Muturi, 2013). It strives to measure what portion of the total assets is financed by debt funds. Leverage ratios are used to measure business and financial risks of a firm (Okwoli and Kpelai, 2006). Studies have shown a positive significant relationship between leverage and firm size (Booth et al., 2001; Wald, 1999; Rajan and Zingales, 1995; Marsh, 1982). Leverage is the amount of debt used to finance other capital expenditure that can improve firm financial performance (Lin et al., 2006; Pandey, 2005).

(3) Liquidity refers to the firm’s ability to convert its short-term assets into cash in order to meet its day-to-day operation (Douglas, 2014). Liquidity is used to measure firm’s ability to meet its current maturing liabilities (Okwoli and Kpelai, 2006). Liargovas and Skandalis (2008) opined that firms can use liquid asset to finance its activities and investment when external finance is not available. According to Katchova and Enlow (2013), liquidity ratios measure the firm’s ability to pay off its short-term debt obligations. Examples are the current ratio and quick ratio, which measure the health of a firm in the short run.

(4) Sales growth refers to increase in sales over a specific period of time. Sustainable growth is defined as the annual percentage growth in sales that is consistent with the firm’s financial policies (Pandey, 2005). The amount a company derives from sales compared to a previous, corresponding period of time in which the latter sales exceed the former. Several studies such as Omondi and Muturi (2013) and Rehana et al. (2012) measure sales growth as the current year sales minus prior year sales and dividing by prior year sales.

4.3 Financial performance
Performance is multi-faceted, and the appropriate measure selected to assess corporate performance depends on the type of organization evaluated, and the objectives to be achieved through that evaluation (Kaguri, 2013). Firm performance encompasses three specific areas: financial performance (profits, ROA, return on investment, etc.); product market performance (sales, market share, etc.); and shareholder return (total shareholder return, economic value added) (Richard et al., 2008).

Lebans and Euske (2006) provided a set of definitions to illustrate the concept of performance:
- performance is a set of financial and non-financial indicators which offer information on the degree of achieving of objectives and results; and
- performance is dynamic, requiring judgment and by using a causal model that describes how current actions may affect future results.

There are two kinds of performance: financial performance and non-financial performance. Company’s performance is evaluated in three dimensions. The first dimension is company’s productivity, or processing inputs into outputs efficiently. The second is profitability dimension, or the level of which company’s earnings are bigger than its costs. The third dimension is market premium, or the level of which company’s market value is exceeding its book value (Walker, 2001).

According to Mutende et al. (2017), financial performance refers to a firm’s ability to achieve planned financial results as measured against its intended outputs. Financial performance is usually measured using financial ratios, such as ROE, ROA, return on capital, return on sales (ROS) and operating margin (Gilchris, 2013). Ratios provide a broader understanding of a company’s performance, since they are calculated from
information obtained from financial statements of a company. Thus, the emphasis of financial performance is mostly on variables related directly to financial report. The categories of ratios include: liquidity, activity, profitability, debt or solvency:

1. Liquidity ratios: measure the availability of cash to pay debt.
2. Activity ratios: measure how quickly a firm converts non-cash assets to cash.
3. Debt ratios: measure the firm’s ability to pay long-term debt.
4. Profitability ratios: measure the firm’s use of its assets to generate the acceptable rate of return.
5. Market ratios: measure investors’ response to owning a firm’s stock and the cost of stock. They are concerned with the return on investment for shareholders.

4.4 Theoretical framework
The study is anchored on systems theory to explain the interaction of the external environment with the performance of the firm; and the RBV to explain how internal factors (firm characteristics) determine the outcome of the firm.

4.4.1 Systems theory. Nwachukwu (2006) defined a system as “a set of interrelated and interdependent parts arranged in a manner that produces a united whole.” Kühn (1974) considered a system as “any pattern whose elements are related in sufficiently regular way to justify attention.” Kühn (1974) extended the theory to include the fact that the knowledge of a part of a system facilitates the knowledge of another part. A system can either be controlled (cybernetic) or uncontrolled. A controlled system sensed information (detector), applies rules to take decision on what is sensed (selector) and makes some transaction or communication between the system (effector). According to Kühn (1974), the aim of decision (communication and transaction) between systems is to achieve equilibrium. A system can either be a closed system in which case interactions occur only between elements within the system and not with any system outside it, or an open system where interactions occur both within the system and outside it. Closed systems tend toward negative entropy with the likelihood of decaying due to the absence of exchanges with outside systems.

According to Laszlo and Krippner (1998), “Systems theory promises to offer a powerful conceptual approach for grasping the interrelation of human beings and the associated cognitive structures and processes specific to them in both society and nature.” It is “concerned with the holistic and integrative exploration of phenomena and events.” The term conveys “a complex of interacting components together with the relationships among them that permit the identification of a boundary-maintaining entity or process.” The general systems theory aims at looking at the entire world as a composite of co-existing, interacting and interrelating elements. This is not to undermine or downplay the value of studying units, subsystems or even systems within a larger context (a reductionist approach) as is done in specialization, but to place all disciplines within proper perspective of the whole.

4.4.2 Resource-based view (RBV). The RBV posits a link between firms’ internal resources and performance (Denizel and Özdemir, 2006). According to RBV, the competitive advantage of a firm can be built on a firm’s resources (Bharadwaj et al., 1993; Hunt, 1999) that meet some important conditions such as value, heterogeneity, rareness, durability, imperfect mobility, unsubstitutability, imperfect imitability and ex ante limits to competition (Cater, 2001). Barney (1991) further observed that a little amount of heterogeneity should certainly exist within different firms in order to be able to explain the observed performance differences between firms. Otherwise, all firms possessing identical resources would
conceive of and implement the same strategies and could only improve their effectiveness and efficiency to the same extent, ending up with no sustained competitive advantage or performance superiority (Denizel and Ozdemir, 2006).

Lately, the RBV has focused on the relationship with environmental threats and opportunities (Barney, 1986, 1996; Mahoney and Pandian, 1992).

RBV lists four necessary attributes of firm resources that can generate sustained competitive advantages as follows:

1. Being valuable (enabling a firm to conceive of and implement strategies that will improve its effectiveness and efficiency).

2. Being rare (By this assertion RBV does not dismiss the importance of valuable but common resources. However, it claims that such resources can help to ensure a firm’s survival but cannot lead to competitive superiority for the firm).

3. Being imperfectly imitable (due to unique historical conditions; causal ambiguity between the competitive advantage and the resource giving rise to it; and social complexity of the resource generating competitive advantage).

4. Absence of strategically equivalent substitutes.

4.5 Review of empirical studies

4.5.1 Macroeconomic factors and firm performance. Issah and Antwi (2017) investigated the role of macroeconomic variables on firm’s performance in the UK. Multiple regression was used to analyze the data. They studied a total of 59 macroeconomic variables, subjected to principal component analysis for variable reduction. The full sample model showed adjusted $R^2$ value of 0.91, and the following variables were significant: lagged ROA; adjusted unemployment rate; benchmarked unit labor costs; real GDP and exchange rate. And five out of the six studied industries had significant $F$-values.

Owolabi (2017) examined the relationship between economic characteristics and financial performance in Nigeria. The economic characteristics were: government expenditure, inflation, interest rate and exchange rate. The sample comprised 31 manufacturing firms listed on the Nigeria Stock Exchange. The duration of the study was from 2010 to 2014. The effect of government expenditure, inflation, interest rate and exchange rate on EPS and ROA was not significant. Interest rate was significant for only ROE, while all the variables (government expenditure, inflation, interest rate and exchange rate) were significant for Tobin’s $Q$.

Mwangi and Wekesa (2017) examined the influence of economic factors on firm performance in Kenya. They study used a descriptive research design, and the sample comprised 74 staff working in Kenya Airways Finance Department. The economic factors were interest rate and taxation; the dependent variables of the study were efficiency and growth. The study used primary data. They used multiple regression technique in testing the hypotheses. They found that economic factors had significant effect on performance.

Rao (2016) examined the relationship between macroeconomic factors and financial performance in Nairobi. The sample comprised five firms listed under the energy and petroleum sector of the Nairobi Stock Exchange. The study was from 2004 to 2015. The study found a significant negative effect of interest rate and oil price on financial performance. However, GDP growth, exchange rate and inflation rate were not significant.

Otambo (2016) examined the effect of macroeconomic variables on financial performance of banks in Kenya. The duration of the study was from 2006 to 2015. ROA was used to measure financial performance while quarterly interest rates, quarterly exchange rates (USD/KSH), quarterly GDP and quarterly inflation rates were used to measure interest rates,
exchange rates, GDP and inflation rates. The study found that interest rates and exchange rates affect financial performance negatively while GDP affects financial performance positively. Inflation rates were not significant.

Udu (2015) examined the influence of environmental factors on business operations in Nigeria. The duration of the study was from 1981 to 2013. The variables studied were inflation rate, interest rate, unemployment rate, and exchange rate, and business operations proxied as real GDP was the dependent variable. Ordinary least squares method of analysis was employed to test the hypothesis. The study found that interest rate and unemployment rate were positive and significant.

Gado (2015) examined the impact of macro environment on performance in Nigeria. The sample comprised 20 most capitalized companies. The study used ordinary least squares and correlation. The results showed that collectively the macro-environmental variables have significant and positive impact on performance. Specifically, government expenditure and inflation have a positive impact while exchange and interest rate have a negative impact.

Murungi (2014) examined the relationship between macroeconomic variables and financial performance in Kenya. The sample comprised 46 Insurance firms listed on Kenya Stock Exchange. The study duration was from 2009 to 2013. The data were analyzed using multiple regression. The study found that interest rate and GDP were statistically significant. Others such as inflation rate, exchange rate, money supply and size of assets were not statistically significant.

Kiganda (2014) examined the effect of macroeconomic factors on profitability of banks in Kenya. The study focused on Equity Bank. The studied macroeconomic factors were: real GDP, inflation and exchange rate. The study used the Cobb–Douglas production function transformed into natural logarithm and used annual data from 2008 to 2012. The results showed that the macroeconomic factors (real GDP, inflation and exchange rate) have insignificant effect on profitability of Equity Bank at 5 percent level of significance. The study focused on a single bank which limits the generalizability of the findings.

Ogunbiyi and Ihejirika (2014) examined the effect of interest rates on profitability of Deposit Money Banks in Nigeria. They used country-level aggregate annual data over a period of 13 years from 1999 to 2012. They employed multivariate regression analysis. The results showed that maximum lending rate, real interest rate and savings deposit rate have negative and significant effect on profitability of banks as measured by ROA at 5 percent level of significance. However, no significant relationship was found between interest rate and net interest margin of banks.

Osamwonyi and Michael (2014) investigated the impact of macroeconomic variables on profitability of banks in Nigeria from 1990 to 2013. They used pooled ordinary least squares (POLS) regression. The macroeconomic variables were: GDP, interest and inflation rate; profitability was proxied using ROE. The study reported a positive effect of GDP on ROE. Interest rate had a significant negative effect on ROE, while inflation was not significant at all levels of significance.

Enyioko (2012) examined the effect of interest rate policies on performance of banks in Nigeria. The sample comprised 20 banks that emerged from the consolidation exercise of 2004. They applied regression and error correction models to analyze the relationship. The study reported that interest rate policies have not affected the performance of banks significantly.

Izedonmi and Abdullahi (2011) studied the effect of three macroeconomic variables, i.e. inflation, exchange rate and market capitalization on the performance of 20 sectors of the Nigerian Stock Exchange (NSE) for the period 2000–2004. The study reported that the extent to which a factor affected the various sectors varied from one sector to another. Jointly the study found no significant influence of macroeconomic factors on the NSE.
Kandir (2008) investigated the effect of macroeconomic factors on stock returns in Turkey. The sample comprised all non-financial firms listed on the Istanbul Stock Exchange for the period 1997–2005. Macroeconomic variables in the study were: growth rate of industrial production index, change in CPI, growth rate of narrowly defined money supply, change in exchange rate, interest rate, growth rate of international crude oil price and return on the MSCI World Equity Index. Multiple regression was employed in data analysis. The study finds that exchange rate, interest rate and world market return affect all of the portfolio returns, while inflation rate is significant for only 3 of the 12 portfolios. On the other hand, industrial production, money supply and oil prices do not have any significant effect on stock returns.

4.5.2 Firm characteristics and firm performance. Dioha et al. (2018) examined the effect of firm characteristics on profitability in Nigeria. The sample consisted of 18 listed consumer goods companies for the period 2011–2016. Profitability was proxied by ROS, while firm characteristics were proxied by firm age, firm size, sales growth, liquidity and leverage. Multiple regression was used to analyze the data. The study found that size, sales growth and leverage have significant effect on profitability. However, age and liquidity were not significant.

Bist et al. (2017) examined the impact of firm characteristics on financial performance in Nepal. They studied 18 Nepalese insurance companies from 2008 to 2016. Multiple regression was used to analyze the data. The regression analysis showed that the coefficients of leverage and premium growth were positive and significant at 1 percent level. However, the coefficients of diversification, size, liquidity and claim payments were negative and insignificant.

Lasisi et al. (2017) examined the determinants of profitability of listed agricultural companies in Nigeria. The sample comprised four agricultural firms listed on the Nigeria Stock Exchange for the period 2008–2016. The independent variables were leverage, liquidity, sales growth and operating expenses efficiency. They analyzed the panel data using multiple regression technique. The study findings revealed that liquidity and sales growth have a positive and significant effect on profitability (ROE), leverage had a negative and significant effect on profitability, and operating expenses efficiency revealed an insignificant negative effect on the profitability. The study was, however, delimited to firms in the agricultural sector.

Mohammed and Usman (2016) examined the impact of corporate attributes on share price in Nigeria. The sample comprised five listed pharmaceutical firms for a period of 10 years (2004–2013). Multiple regression was used to analyze the data. They found that size, leverage and growth have a positive and significant impact on profitability.

Bhutta and Hasan (2013) examined the impact of firm-specific and macroeconomic factors on profitability of firms in Pakistan. The sample comprised firms listed on the food sector of Karachi Stock Market for the period 2002–2006. The firm-specific factors include debt to equity, tangibility, growth and size, and the macroeconomic factor was food inflation. They found a significant negative relationship between size and profitability, and an insignificant positive relationship between tangibility, growth, food inflation and profitability. Similarly, an insignificant negative relationship is observed between debt to equity ratio and firm profitability.

Chandrapala and Knápková (2013) studied the effect of firm-specific factors on financial performance in Czech Republic. The sample comprised 974 firms over the period 2005–2008, using data from Albertina database. They used pooled and panel designs for the analysis. They found that the firm size and sales growth had significant positive impact on ROA. However, debt ratio and inventory had significant negative impact on ROA.

Kaguri (2013) examined the relationship between firm characteristics and financial performance in Kenya. The sample comprised 17 life insurance companies over the period of
2008–2012. The studied firm characteristics were: size, diversification, leverage, liquidity, age, premium growth and claim experience of life insurance companies in Kenya. Regression analysis was used to analyze the data. All variables were found to be statistically significant.

Mehari and Aemiro (2013) examined firm-specific factors that determine performance in Ethiopia. The sample comprised nine insurance companies for the period 2005–2010. The firm characteristics were: size, leverage, tangibility, loss ratio (risk), premium growth, liquidity and age. Performance was proxied as return on total assets (ROA). The results of regression analysis revealed that size, tangibility and leverage were positive and statistically significant; however, loss ratio (risk) was negative and statistically significant. Premium growth, age and liquidity were statistically non-significant.

Similarly, Sumaira and Amjad (2013) examined determinants of profitability in Pakistan. The sample comprised 31 insurance firms (life and non-life insurance) from 2006 to 2011. The study found that leverage, size and age of the firm were significant determinants of profitability, while sales growth and liquidity were not significant.

Sambasivam and Ayele (2013) studied the performance of insurance companies in Ethiopia. The sample comprised nine listed insurance companies from 2003 to 2011. The firm-specific factors were: age, size, volume of capital, leverage, liquidity, growth and tangibility of assets, while profitability was proxied by ROA. They found that growth, leverage, volume of capital, size and liquidity were significant determinants of performance. While liquidity and leverage are negative, age and tangibility were not significant.

4.5.3 Macroeconomic factors, firm characteristics and firm performance

Rani and Zergaw (2017) examined bank-specific, industry-specific and macroeconomic factors on profitability of Ethiopian commercial banks. Profitability was proxied by ROE and net interest margin. They used secondary data from 2005 to 2015. Multiple regression was used to analyze the data. The study results showed that capital adequacy, management efficiency, earnings and liquidity ratios significantly affected ROE, while net interest margin significantly affected capital adequacy and earnings. The industry-specific variable proxied by industry growth rate had significant impact on net interest margin. All the macroeconomic factors (inflation, GDP, tax rate and exchange rate) had positive but insignificant impact both on ROE and net interest margin.

Ghareli and Mohammadi (2016) studied the effect of macroeconomic factors and firm characteristics on quality of financial reporting in Iran. The macroeconomic factors in the study were exchange rates, inflation rates, interest rates and GDP. The firm characteristics included working capital, size of firm and financial leverage. The sample comprised 91 firms listed on the Tehran Stock Exchange. The duration of the study was from 2005 to 2013. Multiple linear regression and Spearman correlation test were used to test the hypotheses. The results showed that exchange rate, interest rate and leverage were positive and significant, while GDP was negative and significant. Inflation rate was negative but not significant, while firm size was not significant.

Owoputi et al. (2014) examined the impact of bank-specific, industry-specific and macroeconomic factors on profitability of banks in Nigeria. They found that inflation rate was significant for both ROA and ROE. Interest rate was significant for ROA and NIM. The real growth rate of GDP was not significant. Among the bank-specific variables, size was found significant for the profitability measures: ROA, ROE and NIM.

Mirza and Javed (2013) examined macro and micro determinants of financial performance in Pakistan. The sample comprised 60 Pakistani firms listed on Karachi Stock Exchange for the period 2007–2011. The results showed that income per capita was significant and positive, inflation was significant but negative. Firm characteristics showed that debt to equity ratio was significant and positive, both short-term and long-term debt to
total assets was significant and negative. Firm size was significant and positive, while liquidity (current ratio) was significant but negative.

Riaz and Mehar (2013) investigated the impact of bank-specific variables and macroeconomic indicators on profitability of commercial banks in Pakistan from 2006 to 2010. The variables studied were: asset size, credit risk, total deposits to total assets ratio, interest rate (discount rate) and the profitability measures were: ROA and ROE. The sample included all 32 commercial banks. They employed regression for data analysis. They reported a significant impact of the bank-specific variables (asset size, total deposits to total assets and credit risk) and interest rate on ROE, while credit risk and interest rate had a significant impact on ROA.

Kanwal and Nadeem (2013) investigated the impact of macroeconomic variables on profitability of public limited commercial banks in Pakistan for years 2001–2011. They used POLS to examine the effect of three major external factors: inflation rate, real GDP and real interest rate on profitability indicators: ROA, ROE and equity multiplier (EM) ratios in three separate models. The study finds that there is a strong positive relationship of real interest rate with ROA, ROE and EM. Second, real GDP is found to have an insignificant positive effect on ROA, but an insignificant negative impact on ROE and EM. Inflation rate, on the other hand, has a negative link with all three profitability measures.

Charles (2012) investigated the performance of monetary policy on manufacturing sector in Nigeria, using econometrics test procedures. The result indicates that money supply positively affects manufacturing index performance while company lending rate, income tax rate, inflation rate and exchange rate negatively affect the performance of manufacturing sector.

Zeitun et al. (2007) examined macro and microeconomic determinants of corporate performance and failure in Jordan. The sample comprised 167 Jordanian companies from 1989 to 2003. The key macroeconomic indicators studied were nominal interest rate, changes in money supply, production manufacturing index, inflation, exports and availability of credit, including Islamic credit. They found that interest rate negatively and significantly affects firm performance measured by ROA. Both production manufacturing index and growth of Islamic credit facilities positively and significantly affected firm’s performance. The significant microeconomic variables were size, age and total debt to total assets.

5. Methodology

5.1 Research design
Research design refers to the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Claire et al., 1962). The study made use of ex post facto research design. Kerlinger and Rint (1986) observed that an ex post facto investigation seeks to reveal possible relationships by observing an existing condition or state of affairs and searching back in time for plausible contributing factors. Ex post facto design is deemed appropriate for the study because the study is non-experimental, and seeks to investigate causal relationship between the dependent and independent variables of the study (Owolabi, 2017).

5.2 Population of the study
Population is defined as all the members of a real or hypothetical set of people, events or objects to which a researcher wishes to generalize the results of the study (Borg and Gall, 1989). The population of the study is made up of firms quoted on the floor of the NSE as at end of 2017. The number of firms included in the various sectors on the NSE is shown in Table II.
5.3 Sample size of the study

The study focused on firms in the consumer goods sector of the NSE. The study employed a variant of non-probability sampling, namely, the purposive sampling technique and included all the firms in the consumer goods sector into the sample.

List of consumer goods manufacturing companies (Nigerian Stock Exchange Website, 2017):

(1) DN Tyre & Rubber Plc.
(2) Champion Breweries Plc.
(3) Golden Guinea Breweries Plc.
(4) International Breweries Plc.
(5) Nigerian Breweries Plc.
(6) 7-Up Bottling Company Plc.
(7) Dangote Flour Mills Plc.
(8) Dangote Sugar Refinery Plc.
(9) Flour Mills Nigeria Plc.
(10) Honeywell Flour Mill Plc.
(11) Multi-Trex Integrated Plc.
(12) N. Nigeria flour mills plc.
(13) Union Dicon Salt Plc.
(14) Cadbury Nigeria Plc.
(15) Nestle Nigeria Plc.
(16) Nigerian Enamelware Plc.
(17) Vitafoam Nigeria Plc.
(18) P.Z. Cussons Nigeria Plc.
(19) Unilever Nigeria Plc.
(20) McNichols Plc.
(21) Nascon Allied Industries Plc.
5.4 Sources of data
The study employed secondary data. These are described as data previously obtained for purposes other than the present study. The sources utilized include annual financial reports, such as Statement of Comprehensive Income and the Statement of Financial Position, of the selected companies for the period 2011–2017. Secondary data for economic factors were obtained from the Statistical Bulletin of the CBN.

5.5 Technique of data analysis
The study employed multiple linear regression technique. This is a “statistical technique which analyses the relationship between a dependent variable and multiple independent variables by estimating coefficients for the equation on a straight line” (Hair et al., 2006). A multiple linear regression model was used to understand the relationships between the dependent variable and the independent variables (Malhotra and Birks, 2000).

5.5.1 Model specification. The model is stated in its implicit form below as follows:

\[ \text{ROA} = F(\text{Macro-economic factors, Firm characteristics}). \]

The estimation approach leads to the following estimation equations:

\[ \text{ROA}_{it} = \alpha + \text{IntR}_{t} + \text{InfR}_{t} + \text{ExcR}_{t} + \text{GDPR}_{t} + \text{Firm Size}_{it} + \text{Leverage}_{it} + \text{Liquidity}_{it} + \mu \]  (1)

5.5.2 Robustness test

\[ \text{ROE}_{it} = \alpha + \text{IntR}_{t} + \text{InfR}_{t} + \text{ExcR}_{t} + \text{GDPR}_{t} + \text{Firm Size}_{it} + \text{Leverage}_{it} + \text{Liquidity}_{it} + \mu \]  (2)

5.5.3 Description of variables. The list below presents the description of variables included in the model:

1. Dependent variable:
   - ROA<sub>it</sub>: measured as the proportion of net income to total assets in the period (t);
   - ROE<sub>it</sub>: measured as the proportion of net income to total equity in the period (t); and
   - NPM<sub>it</sub>: measured as the proportion of net profit to revenue in the period (t).

2. Independent variables:
   - IntR<sub>t</sub>: measured as the official lending rate during a year;
   - InfR<sub>t</sub>: measured as the annual change in the CPI;
   - ExcR<sub>t</sub>: measured as the official exchange rate during a year;
   - GDPR<sub>t</sub>: the variable is an indication of economic growth. Measured as the annual change in GDP;
   - Firm Size<sub>it</sub>: measured as the natural logarithm of total assets in the period (t);
   - Leverage<sub>it</sub>: measured as the proportion of debt to equity in the period (t); and
   - Liquidity<sub>it</sub>: measured as the proportion of debt to equity in the period (t).

6. Data analysis
6.1 Descriptive statistics and model results
The descriptive statistics are shown in Table III. The number of observations was 146; while the p-value of the Jarque–Bera statistics showed that all variables were not normally distributed. The model's degree of goodness of fit was estimated and evaluated using
multiple coefficients denoted by $R^2$ and the adjusted $R^2$. $R^2$ is the square of this measure of correlation and indicates the proportion of the variance in the dependent variable that is explained by the independent variables in the model. However, the disadvantage of $R^2$ is that it tends to over-estimate the success of the model in some cases when applied to the real world, so an adjusted $R^2$ value takes into account the number of variables in the model and the number of observations is used (Ahmed, 2006). The $R^2$ value is 0.28; and the adjusted $R^2$ is 0.24; therefore the independent variables explain approximately 24 percent of the variation in the dependent variable (Table IV).

The $F$-statistic measures the statistical significance of the model; the $F$-value is 7.60 ($p < 0.05$); therefore, the model is statistically significant. The properties of both the standardized and unstandardized regression coefficients were used in assessing each independent variable (Issah and Antwi, 2017). The unstandardized coefficient measures the average change in the dependent variable associated with one unit change of the independent variable, holding other independent variables constant. Standardized

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
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<td>-1.269880</td>
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<tr>
<td>IntR_t</td>
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Weighted statistics

<table>
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</tr>
<tr>
<td>$F$-statistic</td>
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<td>Durbin–Watson stat.</td>
<td>1.214496</td>
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<tr>
<td>Prob. ($F$-statistic)</td>
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Unweighted statistics

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<td>1.238974</td>
</tr>
</tbody>
</table>

Source: EViews 9

| Source: EViews 9 |  
|---|---|---|---|---|
| IntR_t | InR_t | ExcR_t | GDPR | Firm Size | Leverage | Liquidity |
| Mean | 12.56164 | 11.50645 | 211.9160 | 3.273973 | 24.18891 | 0.538857 | 2.405487 |
| Median | 12.00000 | 10.80000 | 188.4534 | 4.300000 | 24.77222 | 0.293164 | 4.95891 |
| Maximum | 14.00000 | 16.50000 | 305.5000 | 6.300000 | 27.01342 | 5.95043 | 161.7999 |
| Minimum | 11.00000 | 8.047411 | 159.2632 | -1.600000 | 18.04201 | -1.029951 | -87.86760 |
| SD | 1.050272 | 3.175347 | 58.61567 | 2.616975 | 2.038982 | 0.858093 | 21.45939 |
| Skewness | 0.194952 | 0.490764 | 0.822211 | -0.711094 | -1.218807 | 3.351389 | 5.349119 |
| Kurtosis | 1.754506 | 1.672726 | 1.873250 | 2.215223 | 4.337613 | 18.97932 | 45.02500 |
| Probability | 0.005253 | 0.000025 | 0.000066 | 0.000032 | 0.000000 | 0.000000 | 0.000000 |
| Sum | 1,834.000 | 1,679.942 | 30,939.74 | 478.0000 | 3,531.581 | 78.38117 | 351.2011 |
| Sum sq. dev | 159.9452 | 1,462.010 | 498.1904 | 933.0411 | 602.8298 | 106.7868 | 68.77330 |
| Observations | 146 | 146 | 146 | 146 | 146 | 146 | 146 |

Descriptive statistics of variables

Table III.

Source: EViews 9

<table>
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<tr>
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Source: EViews 9

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Macroeconomic factors
coefficient (also known as beta) measures the contribution of each independent variable on the dependent variable.

6.1.1 Analysis of H1

H1. There is no significant effect of interest rate on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that interest rate had a negative but non-significant effect on ROA ($t: -0.375893; p > 0.05$). The study therefore rejects the alternate hypothesis and accepts the null of “no significant effect of interest rate on ROA of consumer goods manufacturing firms.”

6.1.2 Analysis of H2

H2. There is no significant effect of inflation rate on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that inflation rate had a negative but significant effect on ROA ($t: 1.799492; p < 0.10$). The study therefore rejects the null hypothesis and accepts the alternate of “a significant effect of inflation rate on ROA of consumer goods manufacturing firms.”

6.1.3 Analysis of H3

H3. There is no significant effect of exchange rate on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that exchange rate had a negative but non-significant effect on ROA ($t: -0.902177; p > 0.05$). The study therefore rejects the alternate hypothesis and accepts the null of “no significant effect of exchange rate on ROA of consumer goods manufacturing firms.”

6.1.4 Analysis of H4

H4. There is no significant effect of GDP growth rate on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that GDP growth rate is positive and had a significant effect on ROA ($t: 1.710709; p < 0.10$). The study therefore rejects the null hypothesis and accepts the alternate of “a significant effect of GDP growth rate on ROA of consumer goods manufacturing firms.”

6.1.5 Analysis of H5

H5. There is no significant effect of firm size on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that firm size is positive and had a significant effect on ROA ($t: 1.922123; p < 0.10$). The study therefore rejects the null hypothesis and accepts the alternate of “a significant effect of firm size on ROA of consumer goods manufacturing firms.”

6.1.6 Analysis of H6

H6. There is no significant effect of leverage on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that leverage is positive and had a significant effect on ROA ($t: 3.519396; p < 0.05$). The study therefore rejects the null hypothesis and accepts the alternate of “a significant effect of leverage on ROA of consumer goods manufacturing firms.”
6.1.7 Analysis of H7

H7. There is no significant effect of liquidity on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that liquidity is positive and had a significant effect on ROA ($t$: 3.390252; $p < 0.05). The study therefore rejects the null hypothesis and accepts the alternate of “a significant effect of liquidity on ROA of consumer goods manufacturing firms.”

6.2 Discussion of findings

The study explored the interrelatedness of macroeconomic factors, firm characteristics and financial performance. The macroeconomic factors showed inconsistent results; interest rate had negative but non-significant effect, while inflation rate had a negative and significant effect. Exchange rate was negative but non-significant, while GDP growth rate was positive and significant. The mixed results may partially be attributed to the proxy for financial performance used in a study. The study by Issah and Antwi (2017) in the UK found that real GDP and exchange rate were significant. Otambo (2016) in Kenya also reported that GDP positively affected ROA. Inflation rates were not significant. Owolabi (2017) in Nigeria showed that inflation, interest rate and exchange rate had no significant effect on ROA. The interest rate and exchange rate behavior were in line with the present study of non-significant effect. Similarly, Rao (2016) in Nairobi reported a non-significant effect of exchange rate on financial performance. Gado (2015) in Nigeria found a positive effect for inflation while exchange and interest rate had negative effects.

This is contrary to Mwangi and Wekesa’s (2017) study conducted in Kenya, which showed that interest rate had a significant effect on performance. And Rao (2016) in Nairobi reported a significant negative effect of interest rate on financial performance. But the GDP growth and inflation rate were not significant. Otambo (2016) in Kenya also reported a negative effect of interest rates and exchange rates on ROA; inflation rates were not significant.

The study by Udu (2015) in Nigeria which proxied business operations as real GDP found that interest rate had a positive and significant effect on real GDP. On a sample of Deposit Money Banks in Nigeria, Ogunbiyi and Ihejirika (2014) found that real interest rate has negative and significant effect on ROA. Also, Osamwonyi and Michael (2014) who measured profitability using ROE reported a positive effect for GDP and a significant negative effect for interest rate, while inflation was not significant. Contrary to this, Enyioko (2012) found that interest rate has not affected performance of banks significantly. In conclusion, the effect of macroeconomic factors on performance may be sector based. This supports the study by Izedonmi and Abdullahi (2011) that the extent to which a factor affected a particular sector varies from one sector to another.

In other African countries such as Kenya, the study by Murungi (2014) on a sample of insurance firms found that interest rate and GDP had significant effects on performance, while inflation and exchange rates were not statistically significant. This is contrary to the study by Kiganda (2014) conducted in Kenya but with a focus on Equity Bank, which reported that real GDP, inflation and exchange rate had insignificant effect on profitability. Similarly, Kandir (2008) investigating the effect of macroeconomic factors on stock returns in Turkey reported that exchange rate and interest rate affect all the portfolio returns, while inflation rate was significant for 3 out of the 12 portfolios.

The analysis of firm characteristics showed that firm size, leverage and liquidity had positive and significant effect. The study by Dioha et al. (2018) in Nigeria found that size and...
leverage have significant effect on profitability; but liquidity was not significant. This is consistent with the study by Bist et al. (2017) in Nepal that showed that leverage had a positive and significant effect; but, size and liquidity were negative and insignificant. Chandrapala and Knápková (2013) in Czech Republic found that firm size has a significant positive impact on ROA. However, contrary to the present study, they found that debt ratio had significant negative impact on ROA.

Using firms from the agricultural sector the study by Lasisi et al. (2017) in Nigeria revealed that leverage has a positive and significant effect on ROE, but leverage had a negative and significant effect on ROE.

The study by Mohammed and Usman (2016) in Nigeria showed that size and leverage have a positive and significant effect on share price. In Pakistan, the study by Bhutta and Hasan (2013) on firms listed on the food sector of Karachi Stock Market reported a significant negative relationship between size and profitability, and a positive insignificant relationship between food inflation and profitability. Also, debt to equity ratio had insignificant negative relationship.

Studies conducted on other sectors also show similar and mixed findings. Kaguri (2013) on a sample of life insurance companies in Kenya found that size, leverage and liquidity were statistically significant. On a sample of insurance companies in Ethiopia, Mehari and Aemiro (2013) revealed that size and leverage were positive and statistically significant; however, liquidity was statistically non-significant. Similarly, Sumaira and Amjad (2013) in Pakistan found that leverage and size were significant determinants of profitability, while liquidity was not significant. Sambasivam and Ayele (2013) in Ethiopia, which proxied profitability as ROA, found that leverage and liquidity were significant and negative.

The $F$-statistic which tests the significance of the model was significant ($p < 0.05$). Therefore, jointly macroeconomic factors and firm characteristics interact to determine firm performance. Studies such as Rani and Zergaw (2017) on the banking sector in Ethiopia showed that macroeconomic factors (inflation, GDP and exchange rate) had positive but insignificant impact on ROE. Earnings and liquidity ratios significantly affected ROE. An additional industry-specific variable proxied by industry growth rate had also a significant impact on net interest margin. Also, the study by Owoputi et al. (2014) on banks in Nigeria found that inflation rate was significant for both ROA and ROE. Interest rate was significant for ROA and NIM. The GDP growth rate was not significant. Size was significant for ROA, ROE and NIM. From an Islamic perspective, Zeitun et al. (2007) in Jordan found that interest rate negatively and significantly affects ROA. The significant microeconomic variables were size and total debt to total assets.

Riaz and Mehar (2013) in Pakistan reported a significant impact of asset size and interest rate on ROE; and interest rate had a significant impact on ROA. Kanwal and Nadeem (2013) found that there is a strong positive relationship of real interest rate with ROA, ROE and EM. Second, real GDP is found to have an insignificant positive effect on ROA, but an insignificant negative impact on ROE and EM. Inflation rate, on the other hand, has a negative link with all three profitability measures.

Using samples drawn from manufacturing firms, studies by Ghareli and Mohammadi (2016) on firms in Iran showed that exchange rate, interest rate and leverage had positive and significant effect, while GDP was negative and significant. Inflation rate was negative but not significant, while firm size was not significant. Mirza and Javed (2013) in Pakistan found that inflation was significant but negative. Leverage was significant and positive, firm size was significant and positive, while liquidity (current ratio) was significant but negative. Specifically, Charles (2012) in Nigeria reported a positive relationship between money supply and manufacturing index performance, while inflation rate and exchange rate had negative effect on the performance of manufacturing sector.
7. Conclusion and recommendations

7.1 Conclusion
The study was undertaken to explore the interrelationship between macroeconomic factors, firm characteristics and financial performance of manufacturing firms in Nigeria. Studies have shown that both micro and macro factors interact to determine the financial performance of a firm. While micro factors are under the control of management, the macro factors are outside the company and not under the control of management. The Nigerian economy has shown volatility in macroeconomic factors, such as exchange rate, inflation, interest rate, etc. These have hindered performance of manufacturing firms over time; however, firm performance also depends on interaction of such factors with firm characteristics. As decisions regarding financing and liquidity are purely within the ambit of the manager. This then calls for a need to provide evidence on the joint association between macroeconomic factors, firm characteristics and financial performance in developing countries.

7.2 Recommendations
The study makes the following recommendations:

1. Managers should effectively consider interest rates in making borrowing decisions, as this may affect the cost of debt;
2. Government should be wary of the prevailing inflation rate because of its negative effect on manufacturing capacity utilization;
3. Government should endeavor to maintain a stable exchange rate to enable firms secure the needed resources from foreign countries;
4. The government and regulatory authorities should make sustainable effort at ensuring a sustainable GDP growth rate by providing policies which favor the growth of domestic manufacturing firms;
5. Managers should seek efforts at expansion and diversification; this is because of the positive benefits of firm size on growth potential of a firm;
6. The leverage position of a firm should be adequately monitored by managers because a highly geared firm may experience a negative performance over time; and
7. The liquidity posture of a firm should be monitored by managers; emphasis on industry and across firm comparison may be used in monitoring the status of a firm in relation to competitors.

References


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Further reading


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Environmental cost analysis and reporting to measure environmental performance in realizing eco-efficiency at PT Industri Kereta Api (Persero)

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Abstract
Purpose – The purpose of this paper is to simulate the environmental cost reports preparation used to measure environmental performance in realizing eco-efficiency.
Design/methodology/approach – This research uses a descriptive case study by using environmental cost detail data from 2011, 2012, 2013 and 2014. The research object is PT Industri Kereta Api (Persero) located in Madiun, East Java.
Findings – The result of the research shows that PT INKA (Persero) has not specifically made environmental cost report. It is found that the percentage of total environmental cost to operational cost tends to increase; the cost which gives the biggest distribution of total environmental cost is the prevention cost. By 2014, the effect of environmental costs on operating costs tended to decrease and during 2012–2014 PT INKA successfully maintained the blue star PROPER and the absence of environmental pollution reports.
Originality/value – PT INKA’s environmental performance is still well controlled and since its inception in 2014 PT INKA has succeeded in realizing the concept of eco-efficiency.
Keywords Environmental cost, Eco-efficiency, Environmental cost reports
Paper type Research paper

Introduction
Environmental issues arise because of the interaction between economic and environment activities. The higher the intensity, the higher the impact on environment degradation (Idris, 2012). Therefore, environment issues have been a serious problem to be monitored and need a precautionary action from stakeholders. Environmental accounting or green accounting depicts an effort to combine the cost and benefit of environmental activities in economic decision making. The purpose of environmental accounting is to escalate the efficiency of environmental management in order to assess environment activities from the environmental cost and the economic benefit (Putri and Wardiha, 2013; in Moedjarnako and Frisko, 2013). To overcome the damage to the environment, the State Minister of Environment regulation Number 03 Year 2014 had ranked the firms’ environment performance through a program named Program for Pollution Control, Evaluation and Rating or PROPER.
PT INKA is a government-owned company that produces trains, carts and bogie. In its production process, PT INKA produces much waste which potentially contaminates the surrounding environment. Those wastes can be divided into three parts: solid waste (scrap, gram, wood, GFRP – glass fiber reinforced product), liquid waste (used engine oil, travomator oil) and air pollution. During 2002–2004, PT INKA has succeeded to maintain the blue star from PROPER assessment. There are some costs to maintain the blue star in order to keep environmental sustainability. PT INKA, however, has not reported those environmental expenditures. Actually, environmental expenditures have been combined with other expenses. Hence, it makes PT INKA unable to identify precisely what kinds of activities are related to environmental prevention expenditures. Therefore, PT INKA needs to provide an environmental cost report as an accountability report to stakeholders and as a tool in managerial decision making. This research uses a descriptive case study method to try to simulate and provide an environmental cost report separately from the existing one.

Literature review

Environmental impact analysis (AMDAL)

Based on the Act Number 32 Year 2009 for Protection and Environment Management, environment is a unit of all of objects, power, circumstances and mortals, including human beings and their behavior which influences the nature, continuity of life and human welfare and any other mortals. According to the Government Regulation Number 27 Year 1999, the environmental impact analysis (AMDAL) is a study to calculate the environmental impact resulting from business decision making. Every new business in Indonesia must commence with this AMDAL analysis concerning hazardous wastes (B3). Based on this regulation, businesses which produce hazardous waste must supervise and manage such wastes (Badar, 2006, p. 40). AMDAL has some benefits, such as:

1. planning tool and business management as well as regional development;
2. helping decision maker in environmental feasibility test from business or activity plan;
3. giving feedback to detailed technical designs from business or activity plan;
4. giving feedback to supervision and management plans from business or activity plans; and
5. giving information to public about the impact of business or activity plans.

Environmental accounting

Environmental accounting is defined as a precaution, mitigation and or avoidance of environment impact, moving from some chances, start from repairs of events which caused disasters based on those events (Ikhsan, 2008, p. 14). Environmental accounting requires company awareness about potential environment problems resulting from the company's operation, such as, production of waste and air pollution. Companies are responsible for overcoming waste problems by having company operational waste management which needs a special cost budget. Therefore, companies need to record environmental costs in their financial reports.

Companies have some advantages when they do environmental accounting, such as reducing expenditure by identifying and analyzing hidden costs. Environmental accounting provides important information related to additional costs from environmental issues by rechecking product costs and specific processes that may be hidden in overhead costs, so it can be used to make decisions. Environmental accounting may increase companies' economic by increasing business performance.
The increase of both economy and environment performance continually will affect not only customer satisfaction, but also investor satisfaction and regulation requirements (Figure 1).

**Eco-efficiency**

Eco-efficiency stands for ecology and efficiency. This term was first introduced by the World Business Council for Sustainable Development (WBCSD) in 1992. WBCSD defines eco-efficiency as “creating more goods and services with ever less use of resources, waste, and pollution” (Lehni and Pepper, 2000). By implementing eco-efficiency concepts, the companies will not merely emphasize profit from resulting products and services, but also profit from the impact of ecology by minimizing utilization of resources in production processes and lessening waste and pollution. Eco-efficiency implicates that increasing efficiency commences from environmental performance improvement. Eco-efficiency relates to the company activities in producing goods or services in an environmentally friendly manner, simultaneously reducing the negative impact on the environment, and reducing the resources’ consumption. In the developed countries in which the level of environmental concern has been relatively high, eco-efficiency is an emerging phenomenon. Physical and social environmental awareness is very strong at all levels because it will affect the performance of the company in the future.

**Research method**

The research method used is a descriptive case study in PT Industri Kereta Api (Persero) which operates in train production and train overhaul. The research scope is limited only in identifying and classifying environmental costs based on activities, environmental statement processes and how environmental performance can be assessed by environmental cost and the company’s environmental condition.

Data resources collected are:


**Sources:** Ministry of the Environment Japan, 2005. Environmental Accounting Guidelines

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**Figure 1.** The relation of internal and external function
(2) Archive records: organization structure, PT INKA’s map, procedure of hazardous waste management, procedure of spilling hazardous waste handling, laboratory test result of waste, etc.

(3) Interviews: researcher performs direct interview with K3LH Department officers.

(4) Direct observations: in order to obtain information on type of waste produced by PT INKA, how it is handled and how the production process is conducted. The results of direct observation in the form of photo documentation.

(5) Preliminary survey: at this stage, researchers try to recognize the object of research, procedures and systems contained therein. Therefore, obtained a description of the company in general and specifically what can be used as the basis of input in writing this thesis.

(6) Field study: observation of research objects, documentation in the form of techniques of collecting and recording data obtained from the company related to the formulation of research problems. The data come from the Department of Accountancy and the Department of Environment PT INKA.

(7) In addition, online news is also used to gather news about the PROPER achieved by PT INKA for the period 2011–2014 and environmental pollution resulting from PT INKA.

(8) Identify activities and costs related to environmental management. Classify environmental costs based on four categories of environmental costs: prevention, detection, internal failure and external failure costs.

(9) Prepare an environmental financial statement by combining the classification of environmental costs with the environmental benefits identified and collected. The environmental financial statement is used as the basis for measuring environmental performance by calculating the distribution ratio of each category of environmental costs to total environmental costs then by comparison with environmental benefits as well as changes in environmental cost trends.

(10) Interpret the results of the analysis adjusted to the related theories so that it provides input for management in assessing the eco-efficiency derived from the improvement of environmental performance. Make conclusions on the results of research.

**Result and discussion**

*PT Industri Kereta Api (Persero) Madiun environmental management*

Types of waste identified:

1. solid hazardous waste, such as hazardous contaminated cans (cans, drums, etc., waste from primer painting workshop department), used train batteries, car, forklift, dust ex-sand blasting, cartridge and so forth; and

2. liquid hazardous waste, such as used oil and gross oil, and used fuel.

The procedures for handling waste, especially hazardous waste, adopted by PT INKA (Persero) are as follows:

1. Segregation of waste.

   Hazardous waste is sorted according to the type of waste and disposed in the trash as follows:
   - Waste is stored in the garbage such as for cotton waste in contaminated gloves.
• Waste is saved in bins, such as used lubricating oil, used diesel, used kerosene, used oil coolant, used oil, used thinner, ex-sand blasting, ex-sand blasting dust and used resin (see Table II).

• Waste saved on the premises, such as contaminated cans, plasma cutting and gas cutting and glass fiber waste (see Table III).

• Cartridge waste, used TL lamps, used batteries, ex contaminated drums, expired materials can be directly transported to waste temporary storage.

(2) Temporary storage of hazardous and toxic (B3) waste at a special location called B3 TPS:

• The Environment Unit is responsible for the recording, preparing and reporting the waste balance sheet to the relevant agency.

• Hazardous waste shall be recorded in logbook; for every three months B3 shall be reported to the Ministry of Environment, Environment Agency of East Java Province, and Madiun City Environmental Office. This type of waste is stored for up to 90 days.

(3) Logistics Manager 1 is responsible for the disposal of hazardous and toxic (B3) waste materials to third parties in accordance with applicable laws and regulations.

Issues emerging related to environmental management
In December 2011, as a result of PROPER assessment conducted by the Ministry of Environment, PT INKA (Persero) received a black star for environmental management, especially in the management of air emission quality from the grit blasting process. From that assessment, PT INKA (Persero) received a sanction in the form of announcement to public and dismissal of credit by bank for its reputation. In 2013, PT INKA had been routinely tested for one-time chimney emissions and air analysis conducted twice a year. Wastewater testing has been routinely conducted since 2012, which is conducted annually four times a year.

Classifying and identifying environmental costs
Environmental costs incurred are recorded as an expense of the K3LH Department and classified as administrative and general expenses in the income statement of the company. Such expenses include: employee expenses; general expenses; service charges; taxes, fees and levies; depreciation and amortization expense; maintenance expenses; education and training expenses; and research and development expenses.

PT INKA (Persero) has not made a specific environmental cost report. Costs associated with environmental costs are accounted for under administrative and general expenses. The environmental costs consisted of the following:

(1) Cost of nuisance permit: these costs incurred to protect residents in the area around the plant who are affected by the disruption of factory activity, such as noise, vibration, smell and emissions. The Interference License permit is submitted to local government of Madiun and extended annually.

(2) Coordination fee with environmental division team: these costs incurred in coordination with the team from the Madiun City Department of the Environment.

(3) Facility maintenance fees: these costs are non-routine and are used to maintain facilities and equipment in the management of hazardous and toxic waste, such as, the maintenance of powder trolleys, purchase of plastic bags for waste, septic tank construction, maintenance of material warehouse and so on.
(4) Cost of treatment of oil waste: oil waste treatment cost is for waste process management by PT Logam Jaya Abadi. The resulting oil waste is processed to change the characteristics and composition to eliminate or reduce the toxicity.

(5) Cost of handling B3 waste: these costs incurred in the process of transportation and disposal of B3 waste by third parties, PT Logam Jaya Abadi.

(6) Cost of wastewater test: this cost is to monitor the quality of wastewater (effluent) of the company’s activities in order to avoid environmental pollution. This domestic wastewater test is conducted by Environmental Laboratory of Perum Jasa Tirta I.

(7) Cost of air analysis and stack emissions: the costs of air analysis and stack emissions are issued in order to fulfill the data of quality standard, performance evaluation of pollution control equipment, research and so on. Tests for air analysis and stack emissions were conducted by PT Envilab Indonesia.

(8) PROPER audit fee: these costs are expended as expenditure for the company’s performance assessment of its environmental management by the Ministry of Environment. This audit aims to check whether the management, control and environmental monitoring contained in PT INKA (Persero) are appropriate for rating.

(9) Cleaning and maintaining protected forest: these costs are incurred for clearance and maintenance of the protected forest located within the plant area. This forest serves to absorb emissions released by mills and dust particles from grid blasting and pigmentation processes.

(10) Officer’s salary fee 5R: this fee is incurred for the welfare of the 5R officers. This officer position was established in 2014, who was responsible for overseeing the production process in order to avoid waste and maintain or add 5R signs that are considered less.

(11) Employee education and training costs: this fee is incurred for the education and training of K3LH Department employees. Programs followed such as environmental socialization, guidance and environmental monitoring and so on.

Table I shows environmental costs of PT INKA (Persero) compared to Hansen and Mowen’s standard.

Meanwhile, the total of issued environmental costs by PT INKA is indicated in Table II. The environmental cost reports at PT INKA (Persero) in 2011, 2012, 2013 and 2014 are shown in Tables III–VI.

Relative distribution pattern of environmental cost at PT INKA (Persero)

Having simulated the environmental cost report at PT INKA (Persero), it is necessary to create a relative distribution pattern of environmental costs. The goal is to determine the environmental improvements that need to be emphasized. The relative distribution pattern of environmental costs is measured by the total cost of each activity divided by the total operational costs as shown in Table VII.

If the environmental cost trend diagram is broken down into categories, then the environmental cost trend diagram per category will be obtained. The environmental cost per category trend diagram is useful in monitoring and controlling environmental costs seen by the type of environmental activity. The trend diagram of the per-environmental costs can be seen in Figure 2.

Figure 2 shows the increase or decrease of environmental cost per category to the operational cost of the company. It shows that prevention costs increased from 2011 to 2014. Prevention costs of 0.15 percent in 2011 then moved up to 0.17 percent in 2012, then in 2013
<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>PT INKA (Persero)</th>
<th>Example based on Hansen and Mowen (2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Prevention activity</td>
<td>1. Environment socialization cost</td>
<td>1. Evaluate and select supplier</td>
</tr>
<tr>
<td></td>
<td>1. Evaluate and select supplier</td>
<td>2. Monitoring and maintaining living</td>
<td>2. Evaluate and select tools to control</td>
</tr>
<tr>
<td></td>
<td>pollution</td>
<td>environment cost</td>
<td>pollution</td>
</tr>
<tr>
<td></td>
<td>4. Designing product</td>
<td>salary</td>
<td>5. Implementing environment study</td>
</tr>
<tr>
<td></td>
<td>5. Implementing environment study</td>
<td></td>
<td>6. Auditing environmental risks</td>
</tr>
<tr>
<td></td>
<td>6. Auditing environmental risks</td>
<td></td>
<td>7. Develop environment system management</td>
</tr>
<tr>
<td></td>
<td>7. Develop environment system management</td>
<td></td>
<td>8. Recycling products</td>
</tr>
<tr>
<td></td>
<td>9. Obtain ISO 14001 certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Detection activity</td>
<td>1. Pollution level measurement cost: stack</td>
<td>1. Auditing environmental activities</td>
</tr>
<tr>
<td></td>
<td>1. Auditing environmental activities</td>
<td>emission, ambient air, domestic</td>
<td>1. Pollution level measurement cost: stack</td>
</tr>
<tr>
<td></td>
<td>2. Checking on the process and product</td>
<td>wastewater</td>
<td>emission, ambient air, domestic</td>
</tr>
<tr>
<td></td>
<td>3. Develop environment performance measure</td>
<td></td>
<td>wastewater</td>
</tr>
<tr>
<td></td>
<td>4. Testing pollution</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Verification environment performance to the supplier</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Measure the pollution level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Internal Failure activity</td>
<td>1. B3 waste handling cost</td>
<td>1. Operating pollution prevention tool</td>
</tr>
<tr>
<td></td>
<td>1. Operating pollution prevention tool</td>
<td>2. Oil travo treatment cost</td>
<td>2. Managing the waste</td>
</tr>
<tr>
<td></td>
<td>2. Managing the waste</td>
<td></td>
<td>3. Maintain the policy equipment</td>
</tr>
<tr>
<td></td>
<td>3. Maintain the policy equipment</td>
<td></td>
<td>4. Obtain facility license to produce waste</td>
</tr>
<tr>
<td></td>
<td>4. Obtain facility license to produce waste</td>
<td></td>
<td>5. Recycling the residual</td>
</tr>
<tr>
<td></td>
<td>5. Recycling the residual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>External Failure activity</td>
<td>1. Biodiversity protection: the cost of maintaining a protected forest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Cleaning the polluted lake</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Cleaning the poured up oil</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table I. Environmental cost identification

<table>
<thead>
<tr>
<th>Number</th>
<th>Costs</th>
<th>Year 2011 (Rp)</th>
<th>Year 2012 (Rp)</th>
<th>Year 2013 (Rp)</th>
<th>Year 2014 (Rp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>HO interference permit fees</td>
<td>95,666,224</td>
<td>143,499,336</td>
<td>143,499,336</td>
<td>143,499,336</td>
</tr>
<tr>
<td>2.</td>
<td>Facilities maintenance fee</td>
<td>22,450,000</td>
<td>–</td>
<td>12,845,495</td>
<td>13,352,000</td>
</tr>
<tr>
<td>3.</td>
<td>5R team payroll costs</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>57,915,000</td>
</tr>
<tr>
<td>4.</td>
<td>Socialization cost of LH</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>121,400</td>
</tr>
<tr>
<td>5.</td>
<td>Cost of monitoring and fostering of LH</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>500,000</td>
</tr>
<tr>
<td>6.</td>
<td>The cost of making 5R signs</td>
<td>1,650,000</td>
<td>–</td>
<td>–</td>
<td>26,217,750</td>
</tr>
<tr>
<td>7.</td>
<td>Cost of procurement of personal protective equipment</td>
<td>–</td>
<td>–</td>
<td>8,800,000</td>
<td>–</td>
</tr>
<tr>
<td>8.</td>
<td>PROPER audit fee</td>
<td>3,198,000</td>
<td>–</td>
<td>9,601,700</td>
<td>–</td>
</tr>
<tr>
<td>9.</td>
<td>Cost of domestic wastewater test</td>
<td>–</td>
<td>4,992,500</td>
<td>6,813,000</td>
<td>5,612,700</td>
</tr>
<tr>
<td>10.</td>
<td>Emissions and ambient air test costs</td>
<td>–</td>
<td>–</td>
<td>25,150,000</td>
<td>56,690,000</td>
</tr>
<tr>
<td>11.</td>
<td>Cost of oil transformer treatment</td>
<td>–</td>
<td>20,000,000</td>
<td>20,835,000</td>
<td>–</td>
</tr>
<tr>
<td>12.</td>
<td>B3 waste handling cost</td>
<td>–</td>
<td>24,613,212</td>
<td>32,536,996</td>
<td>41,753,320</td>
</tr>
<tr>
<td>13.</td>
<td>The cost of clearing protected forests</td>
<td>4,500,000</td>
<td>2,600,000</td>
<td>25,910,000</td>
<td>–</td>
</tr>
<tr>
<td>14.</td>
<td>APAR recharge cost</td>
<td>20,400,000</td>
<td>28,880,000</td>
<td>57,060,000</td>
<td>–</td>
</tr>
</tbody>
</table>

**Source:** PT INKA (Persero) Accounting Department Internal Data processed
to 0.34 percent and by 2014 0.38 percent. The increase in prevention activities was due to improvements in prevention activities, such as facility maintenance activities, procurement of self-protective equipment, refilling of APAR tubes and the establishment of a 5R team that served as a supervisory team in 2014.

The detection activity also moved up from 2011 to 2014; in 2011 to 0.004 percent, in 2012 to 0.006 percent, in 2013 to 0.071 percent and by 2014 to 0.08 percent. This was due to the activities undertaken on the recommendation of the 2011 PROPER results such as domestic wastewater test as well as chimney and ambient air emissions test.

In addition, activity in internal failure and external failure indicated fluctuating movement. Internal failure events in 2011 amounted to 0 percent, in 2012 0.054 percent, in

<table>
<thead>
<tr>
<th>Table III.</th>
<th>PT Industri Kereta Api (Persero) environmental costs report year 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental cost</td>
<td>% Total environmental cost</td>
</tr>
<tr>
<td>Prevention costs</td>
<td></td>
</tr>
<tr>
<td>HO interference permit fees</td>
<td>Rp 95,666,224</td>
</tr>
<tr>
<td>Facilities maintenance fee</td>
<td>Rp 22,450,000</td>
</tr>
<tr>
<td>The cost of making 5R sign</td>
<td>Rp 1,650,000</td>
</tr>
<tr>
<td>Recharge charge APAR</td>
<td>Rp 20,400,000</td>
</tr>
<tr>
<td>Total cost of prevention</td>
<td>Rp 140,166,224</td>
</tr>
<tr>
<td>Cost of detection</td>
<td></td>
</tr>
<tr>
<td>Cost coordination with LH team</td>
<td>Rp 3,198,000</td>
</tr>
<tr>
<td>Total cost of detection</td>
<td>Rp 3,198,000</td>
</tr>
<tr>
<td>Internal failure fee</td>
<td></td>
</tr>
<tr>
<td>Total cost of internal failure</td>
<td>Rp 0</td>
</tr>
<tr>
<td>External failure fee</td>
<td></td>
</tr>
<tr>
<td>Clearing protected forest expenses</td>
<td>Rp 4,500,000</td>
</tr>
<tr>
<td>Total cost of external failure</td>
<td>Rp 4,500,000</td>
</tr>
<tr>
<td>Total environmental cost</td>
<td>Rp 147,864,224</td>
</tr>
</tbody>
</table>

Note: Description: operating cost year 2011 in amount of Rp 89,662,678,671

<table>
<thead>
<tr>
<th>Table IV.</th>
<th>PT Industri Kereta Api (Persero) environmental costs report year 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental cost</td>
<td>% Total environmental cost</td>
</tr>
<tr>
<td>Prevention costs</td>
<td></td>
</tr>
<tr>
<td>HO interference permit fees</td>
<td>Rp 143,499,336</td>
</tr>
<tr>
<td>Total cost of prevention</td>
<td>Rp 143,499,336</td>
</tr>
<tr>
<td>Cost of detection</td>
<td></td>
</tr>
<tr>
<td>Cost of domestic wastewater test</td>
<td>Rp 4,922,500</td>
</tr>
<tr>
<td>Total cost of detection</td>
<td>Rp 4,922,500</td>
</tr>
<tr>
<td>Internal failure fee</td>
<td></td>
</tr>
<tr>
<td>Cost of oil transformer treatment</td>
<td>Rp 20,000,000</td>
</tr>
<tr>
<td>B3 waste handling cost</td>
<td>Rp 24,613,212</td>
</tr>
<tr>
<td>Total cost of internal failure</td>
<td>Rp 446,132</td>
</tr>
<tr>
<td>External failure fee</td>
<td></td>
</tr>
<tr>
<td>Clearing protected forest</td>
<td>Rp 2,600,000</td>
</tr>
<tr>
<td>Total cost of external failure</td>
<td>Rp 2,600,000</td>
</tr>
<tr>
<td>Total environmental cost</td>
<td>Rp 195,635,048</td>
</tr>
</tbody>
</table>

Note: Description: operating cost year 2012 in amount of Rp 80,346,309,830
2013 0.091 percent and in 2014 to 0.053 percent. The increases that occurred between the years 2011 and 2013 were due to B3 waste management activities that originally in 2011 had no cooperation with third parties in the management of B3 waste, but starting in 2012 had been in cooperation with third parties in the management of B3 waste. In the year 2014

<table>
<thead>
<tr>
<th>Environmental cost</th>
<th>% Total environmental cost</th>
<th>% Total operating cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prevention costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HO interference permit fees</td>
<td>Rp 143,499,336</td>
<td></td>
</tr>
<tr>
<td>Facilities maintenance fee</td>
<td>Rp 12,845,495</td>
<td></td>
</tr>
<tr>
<td>The cost of making 5R sign</td>
<td>Rp 8,800,000</td>
<td></td>
</tr>
<tr>
<td>Recharge charge APAR</td>
<td>Rp 29,890,000</td>
<td></td>
</tr>
<tr>
<td>Total cost of prevention</td>
<td>Rp 190,024,831</td>
<td>61.7</td>
</tr>
<tr>
<td><strong>Cost of detection</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost coordination with LH team</td>
<td>Rp 25,150,000</td>
<td></td>
</tr>
<tr>
<td>Total cost of detection</td>
<td>Rp 9,601,700</td>
<td></td>
</tr>
<tr>
<td>Internal failure fee</td>
<td>Rp 5,751,000</td>
<td></td>
</tr>
<tr>
<td>Total cost of internal failure</td>
<td>Rp 41,564,700</td>
<td>13.16</td>
</tr>
<tr>
<td><strong>External failure fee</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clearing protected forest</td>
<td>Rp 20,835,000</td>
<td></td>
</tr>
<tr>
<td>Total cost of external failure</td>
<td>Rp 53,371,996</td>
<td>16.9</td>
</tr>
<tr>
<td>Total environmental cost</td>
<td>Rp 53,371,996</td>
<td></td>
</tr>
<tr>
<td><strong>Prevention costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HO interference permit fees</td>
<td>Rp 25,910,000</td>
<td></td>
</tr>
<tr>
<td>Facilities maintenance fee</td>
<td>Rp 25,910,000</td>
<td>8.24</td>
</tr>
<tr>
<td>The cost of making 5R sign</td>
<td>Rp 315,871,527</td>
<td>0.54</td>
</tr>
<tr>
<td>Note: Description: operating cost year 2013 in amount of Rp 53,338,540,790</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental cost</th>
<th>% Total environmental cost</th>
<th>% Total operation cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prevention costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HO interference permit fees</td>
<td>Rp 143,499,336</td>
<td></td>
</tr>
<tr>
<td>Facilities maintenance fee</td>
<td>Rp 13,532,000</td>
<td></td>
</tr>
<tr>
<td>5R team payroll costs</td>
<td>Rp 57,915,000</td>
<td></td>
</tr>
<tr>
<td>Socialization of the environment</td>
<td>Rp 121,400</td>
<td></td>
</tr>
<tr>
<td>Monitoring and environmental coaching</td>
<td>Rp 500,000</td>
<td></td>
</tr>
<tr>
<td>Creation of 5R beams</td>
<td>Rp 26,217,750</td>
<td></td>
</tr>
<tr>
<td>Recharge APAR</td>
<td>Rp 57,060,000</td>
<td></td>
</tr>
<tr>
<td>Total cost of prevention</td>
<td>Rp 298,845,486</td>
<td>74.17</td>
</tr>
<tr>
<td><strong>Cost of detection</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chimney and air emission test costs</td>
<td>Rp 56,690,000</td>
<td></td>
</tr>
<tr>
<td>Cost of domestic wastewater audit</td>
<td>Rp 5,612,700</td>
<td></td>
</tr>
<tr>
<td>Total cost of detection</td>
<td>Rp 61,302,700</td>
<td>13.16</td>
</tr>
<tr>
<td><strong>Internal failure fee</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B3 waste handling cost</td>
<td>Rp 41,573,320</td>
<td></td>
</tr>
<tr>
<td>Total cost of internal failure</td>
<td>Rp 41,573,320</td>
<td>10.36</td>
</tr>
<tr>
<td>Total cost of external failure</td>
<td>Rp 0</td>
<td></td>
</tr>
<tr>
<td>Total environmental cost</td>
<td>Rp 402,901,506</td>
<td></td>
</tr>
<tr>
<td>Note: Description: operating cost year 2014 in amount of Rp 78,232,228,508</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
the internal failure activity tended to decrease because B3 waste was produced less than the previous year.

The external failure activity in 2011 showed the percentage of 0.006 percent, the year 2012 by 0.003 percent, the year 2013 by 0.04 percent and the year 2014 about 0 percent. The decline occurring in 2014 was due to the absence of protected forest conservation activities. It showed that environmental management activities conducted by PT INKA (Persero) had been running quite optimally.

**Linkage of environmental performance in achieving eco-efficiency**

In terms of environment, PT INKA (Persero) has regularly tested the waste generated. It aims to control a good quality standard and prevent the occurrence of environmental pollution. In addition, PT INKA (Persero) also conducts an audit of the company’s environmental performance by the Ministry of Environment commonly referred to as PROPER. Thus, PT INKA (Persero) has been able to apply eco-efficiency concepts that are ecologically or environmentally sound and can produce goods and services while reducing negative environmental impacts.

Some limitations of this research are:

1. The researcher did not obtain the recommendation of PROPER 2011 assessment from PT INKA (Persero). Researchers used recommendations from internet sources.

2. The researcher did not obtain the environmental benefit data obtained from the savings activities in the production process and recycling the waste generated, so that the environmental benefits obtained by the company could not be calculated.

<table>
<thead>
<tr>
<th>Cost based on activity</th>
<th>Year 2011</th>
<th>Year 2012</th>
<th>Year 2013</th>
<th>Year 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention</td>
<td>0.15</td>
<td>0.17</td>
<td>0.34</td>
<td>0.38</td>
</tr>
<tr>
<td>Detection</td>
<td>0.004</td>
<td>0.006</td>
<td>0.071</td>
<td>0.08</td>
</tr>
<tr>
<td>Internal failure</td>
<td>0</td>
<td>0.054</td>
<td>0.091</td>
<td>0.063</td>
</tr>
<tr>
<td>External failure</td>
<td>0.006</td>
<td>0.003</td>
<td>0.04</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0.16</td>
<td>0.23</td>
<td>0.54</td>
<td>0.51</td>
</tr>
</tbody>
</table>

Table VII. Relative distribution pattern of environmental cost

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**Figure 2.** Environmental cost trend per category of 2011–2014

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Conclusion
PT INKA (Persero) has not specifically prepared an environmental cost report. From the results of the preparation of the environmental cost report, it is found that the combination of prevention activity and detection activity had greater value and percentage compared with the combination of internal failure activity and external failure. Therefore, it can be concluded that the company provides more investment in prevention and detection activities so that the wastes generated do not pollute the internal and external environments.

In previous years the proportion of environmental costs to total operational costs continued to increase from 2011 to 2013. This was caused by the recommendation of PROPER result in 2011 that management of B3 waste be handed over to the third party. Ecological or environmental efficiency can be seen from the absence of environmental pollution and its impact caused by management of waste. Finally, it can be said that the concept of eco-efficiency has been met by PT INKA (Persero) started in 2014.

References

Further reading


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The impact of framing and groupthink to the career selection decision of accounting major students

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Department of Accounting, Faculty of Economics and Business, Universitas Airlangga, Surabaya, Indonesia

Abstract
Purpose – The purpose of this paper is to show the impact of framing and groupthink both individually and simultaneously regarding the decision of career selection.

Design/methodology/approach – The samples of this study are determined by the purposive sampling method with accounting major students as the criteria. The number of observation is 178 accounting major students. Independent variables of the study are framing and groupthink, while the dependent variable is the career selection decision. Data used in this study are primary data that are obtained by questionnaire. The analysis techniques used are simple regression analysis, multiple linear regression and coefficient determination analysis.

Findings – The results of this study show that framing has a positive effect on the career selection decision and so does the groupthink.

Originality/value – Both framing and groupthink simultaneously have a positive effect on the career selection decision. The value of coefficient determination ($R^2$) is 21.3 percent, and the rest of 78.7 percent is explained by non-researched variable.

Keywords Accounting students, Framing, Groupthink, Career selection

Paper type Research paper

Preface
According to Setyorini et al. (2014), the beginning of the twenty-first century, that is marked by the existence of trade liberalizing (free market), means that hard work is greatly needed to increase the quality of professional workforces. The unreadiness of the graduates of state universities (PTN) and private universities (PTS) when entering the world of work has become the main problem faced by Indonesia today. It becomes a challenge for both the state universities and private universities to produce professional workforces so that the human resources of Indonesia can compete with the other countries’ workforces, such as Singapore, the Philippines and Malaysia. The human resources of Indonesia are expected to be able to innovate, be professional and work hard to meet the demands that are faced by Indonesia in the competition of the world of work.

One of the factors that cause accounting graduates to work in accordance to their field of study is framing. Framing is an effect on the judgments made by the same way to convey the information, done in different ways (Suartana, 2010). Based on the research conducted by Ariyanto and Sukirno (2016), there is positive and significant framing influence on the job selection decisions of Yogyakarta States University’s accounting students. Meanwhile, a study conducted by Yusnaini (2006) on framing analysis in...
strategic decision making shows that the difference in mean of risk preferences is statistically significant between the decision making of those who adopt information framed in positive framing and the decision making of those who adopt information framed in negative framing.

The groupthink variable also influences the students in determining their career selections. According to Siegel and Marconi (1989), groupthink theory describes the pressure on group compatibility situations, in which group members are reluctant to convey ideas that are considered less popular. This is to prevent minority groups from various alternative values. Based on tracer study data collected by Career and Entrepreneurship Coaching Center (PPKK) of Airlangga University in 2012, there is a tracer study of 67 Bachelors of Accounting respondents, with 43 people (65 percent) having a career type that is compatible with accountancy/study competence obtained and as many as 24 people (35 percent) working not in accordance with the competence of study obtained. In 2013, the tracer study obtained the results of 68 Bachelors of Accounting respondents, with compatible career type with accountancy/study competence obtained at 53 people (78 percent) and 15 people (22 percent) working not in accordance with the competence of study obtained in college. The study that was conducted by Ariyanto and Sukirno (2016) stated that groupthink has a positive and significant influence on the decision of job selection of the accounting students of Yogyakarta State University. Meanwhile, the research conducted by Handoko (2007) states that group decision making will tend to reduce the influence of negative emotions in capital investment alternatives. This study shows the negative impact caused by the group, and is supported by Kreitner and Kinicki (2000) which states that groupthink is one of the threats of group decisions that affect the rejection of an alternative (of capital investment) due to the bias of the latest information obtained.

Based on these problems and indications, it is important to know the influence of framing and groupthink individually and simultaneously to the decision of career selection. This study is a follow-up study of the study conducted by Ariyanto and Sukirno (2016). Previous research was conducted to analyze factors affecting career selection considering the influence of framing and groupthink factors. The similarities with the previous study are the use of independent variables which are framing and groupthink, the dependent variable which is career selection decision making and the respondents in this study who are accounting students in the final year. On the other hand, the difference of this study with the previous one is that the subjects used by previous researchers are students of the accounting program of the State University of Yogyakarta, while this study uses the students of the accounting program of Airlangga University.

This study uses the hypotheses from the decision-making theory. This paper is going to continue with a description of the literatures review, method of study, results and discussion, also the conclusion that will end the overall series of this paper writing. This research is expected to contribute and be the reference for students and job seekers so that they can choose the work according to their interests and abilities. Prior research becomes the basis and reference to analyze the variables’ influence on career selection decisions.

Literatures review

Framing theory
Kahneman and Tversky (1979) first described the effect of framing on decision making through prospect theory. Prospect theory suggests that framing adopted by decision makers can influence decision making. Kahneman and Tversky found that when the choices results are risky, the choices are definitely framed in terms of profits; the decision making would be risk averse but when the results are framed in terms of opportunities, decision making tends to be risk taking.
Robbins and Judge (2011) states that framing is a way of managing meaning by using language. Here, framing emphasizes one or more aspects of the selection of a subject by ignoring the others. Based on the definition of some researchers on framing, it can be concluded that framing can influence decision makers on decision making due to different ways of conveying and managing the meaning of information.

Entman is one of the framing analysts who laid the foundations of the analysis for the study of media content. Framing is used to describe the selection process and highlight certain aspects of reality by media. Projection is a process in making information more meaningful, more interesting or more remembered by the general public. Reality presented prominently has greater possibility to be noticed and to influence the general public in understanding a reality (Eriyanto, 2002) (Table I).

According to Choirun (2011), there are two aspects in framing, which are: have fact or reality and write facts.

According to Yahya and Surya (2013), the framing effect gives influence in investment decisions, especially on students. This indicates that inexperienced subjects may be affected by framing of information or framing. Therefore, it is important to be careful in generalizing research that uses students as subjects in business settings in the real world.

**Groupthink theory**
Siegel and Marconi (1989) argue that groupthink describes pressure on group conformity situations, in which group members are reluctant to convey ideas that are considered unpopular. This is to prevent minority groups from various values of realistic alternative actions in decision making that often ignore minority thinking for majority decision making. Individuals in the majority group are under pressure to modify their beliefs.

According to West and Turner (2010), the factors that encourage the formation of groupthink are cohesiveness, group structural conditions, group stress and leadership factors.

**Decision-making theory**
According to Robbins and Judge (2011, p. 134), decision making is a process of identifying problem, developing alternative solution, choosing the best alternative and implementing the decision.

Hasibuan (2004) mentions several criteria that must be met for data or information to be able to produce rational decisions, which are: well identified, which means that data or information comes from official sources; up to date, which means the data or information is the latest data or information; relevant, data or information is called relevant if it is directly related to the problem; reliable means data or information is completely reliable; and complete means data or information contains complete and unbiased information.

<table>
<thead>
<tr>
<th>Define problems</th>
<th>How is an event/issue viewed?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>As a what?</td>
</tr>
<tr>
<td></td>
<td>Or as a matter of what?</td>
</tr>
<tr>
<td>Diagnose causes</td>
<td>What is the cause of the event seen?</td>
</tr>
<tr>
<td></td>
<td>What is the cause of a problem?</td>
</tr>
<tr>
<td></td>
<td>Who is (the actor) considered the cause of the problem?</td>
</tr>
<tr>
<td>Make moral judgment</td>
<td>What moral values are presented to explain the problem?</td>
</tr>
<tr>
<td></td>
<td>What moral values are used to legitimize or delegate an action?</td>
</tr>
<tr>
<td>Treatment recommendation</td>
<td>What settlement is offered to troubleshoot the problem/issue?</td>
</tr>
<tr>
<td></td>
<td>What paths are offered and must be pursued for solving the problem?</td>
</tr>
</tbody>
</table>

**Source:** Eriyanto (2002)
Theory about career selection

According to Sukardi (1993) “career selection is an expressive action that reflects one’s motivation, knowledge, personality, and ability.”

According to Ardian (2015) there are several factors that influence career selection, namely, internal factors, financial reward, labor market consideration, the availability of employment, job security, career flexibility, promotion opportunity, work environment, professional training, social value, professional recognition and the number of job offers.

Based on the theoretical foundation and previous research, the researcher proposed the following hypothesis.

According to research by Ariyanto and Sukirno (2016), framing has implications for job selection decisions. The same information when presented in different ways will have different meanings. It is certainly necessary to pay attention to the information received in order to be able to select the work that is compatible with the competence, without being affected by the information of others. This is supported by research on framing done by Yahya and Surya (2013), which stated that the framing effect gives influence in investment decisions, especially to students. This indicates that an inexperienced subject may be affected by framing. According to Milch et al. (2009), the observed framing effects to individuals and groups show different results; a group decision shows a non-significant effect on individual decision, while group framing decision shows more significant results. Here, framing is a factor that influences one’s decision making. The hypothesis that can be given is as follows:

H1. There is a positive framing influence on career selection decisions for undergraduate accounting students of Economics and Business Faculty of Airlangga University.

Kreitner and Kinicki (2000) state that groupthink is one of the threats of group decisions that affect the rejection of an alternative (of capital investment) due to the bias of the latest information obtained. Here, groupthink is a factor that influences one’s decision making. The hypotheses that can be given are as follows:

H2. There is a positive groupthink influence on career selection decisions for undergraduate accounting students of the Economics and Business Faculty of Airlangga University.

H3. There is a positive influence of framing and groupthink simultaneously on career selection decisions for undergraduate accounting students of the Economics and Business Faculty of Airlangga University.

Method of the study

The study approach uses the quantitative method. The assumptions used in this research are measurable variables that are useful for explaining mutual relationships, starting with hypotheses and theories.

Dependent and independent variables

In this study, the dependent variable is the decision of career selection, while the independent variables are framing and groupthink. Framing is an effect on the judgments made by the same way to convey the information, done in different ways (Suartana, 2010).

In this study, framing is measured using the following indicators: define problems, diagnose causes, make moral judgment, treatment recommendation; that is why respondents are asked to fill in the questionnaire which has been provided.

Groupthink illustrates the pressure on group conformity situations, where group members are reluctant to convey unpopular ideas. This is to prevent minority groups from
various values of realistic alternative actions in decision making that often ignore minority thinking for majority decision making (Siegel and Marconi, 1989). In this study, groupthink can be measured using the following indicators: cohesiveness, isolation, leadership, decisional stress and distorting needs, thus, respondents are asked to fill in the questionnaire which has been provided.

Career selection decisions are influenced by variables such as framing and groupthink. Career selection decisions in this study can be measured using the following indicators: financial reward, professional training, professional recognition, social values, work environment, labor market consideration and personality (Sanger, 2014; Sulistyawati et al., 2013), thus, respondents are asked to fill in the questionnaire which has been provided.

Sample research, types and sources of data
The data used in this study are quantitative data, with a population of 400 final year undergraduate accounting students of the Economics and Business Faculty of Airlangga University per April 1, 2016. The number of respondents consists of 4 students of the English class, 302 students of a regular class and 94 members of 2014 degree change students. From the students, there are 178 students to be sampled in this study.

Statistical analysis technique
Descriptive statistics are used to analyze by describing the sample data that have been obtained without making a general conclusion. These data are analyzed without using the calculation of the number, but only the comparison relating to the respondents.

Validity is related to the issue of whether we really measure what we think we are measuring (Anshori and Iswati, 2002). The instrument can be said to be valid if it is able to measure what is desired so that it can reveal the data of the variables studied appropriately. Price validity is indicated by the amount of correlation price; generally one item is valid if its price is above 0.30. The price can be used as a benchmark to state whether a single item is valid or not.

Reliability is a tool to measure a questionnaire that is an indicator of a variable or construct. The reliability test is used to measure the same objects and data with reliable results. A questionnaire is said to be reliable if one's response to a statement is consistent or stable over time. Reliability test uses Alpha formula, because the data are in the form of questionnaire with a stratified score (Anshori and Iswati, 2002).

A simple regression analysis test is performed to prove the proposed hypotheses, whether each independent variable influences the decision-making decision of career selection. The testing of these hypotheses is using a significant level ($\alpha$) of 5 percent.

Results and discussion
Demographic statistics of respondents and descriptive statistics
Table II shows the descriptive statistics of the respondents. Of the 178 respondents, 59 respondents are men and the remaining 119 are women. Judging from the class type, only four respondents come from the English class while the remaining 96 are from regular classes and 78 of the type transfer class. Most respondents have a grade point average in the range of 3.01–3.50 (Table III).

Furthermore, related to the validity and reliability of the test results, all instruments of the tested variables are valid except for one invalid question on the groupthink variable which is P8. The P8 question should be dropped and not included in the regression test. The test of this study uses Pearson correlation. Question items that have a correlation value of significance at a level below 5 percent will be accepted. The result of each element
(variable) has a coefficient of Cronbach’s $\alpha$ greater than 0.70 and none of them is less than 0.70. Thus, the measurement items on each element are declared reliable and can be used in research.

**Description of research variables**

Independent variables in this research are framing and groupthink, while the dependent variable is career selection decision. This research will explain the description of respondents’ answers which are the responses or the results of the respondents’ answers on each variable studied. The largest and smallest value is used to find the distance at intervals based on mean values using a scale of 1–5. It can be categorized as follows:

$$\text{Class Interval} = \frac{\text{Biggest value} - \text{Smallest value}}{\text{Number of classes}} = \frac{5-1}{5} = 0.8.$$

The class interval obtained is 0.8 that is the distance of the lowest and highest values in a class or category. So the categories obtained are as shown in Table IV.

**Hypothesis test results**

The value of the coefficient of determination in Table VII shows the value of 0.213, which means that as much as 21.3 percent influence on career selection decisions (dependent
variable) can be explained by independent variables which are included in the model of framing and groupthink simultaneously, while 78.7 percent is explained by other variables that are not included in the model (Tables V–VII).

Discussion

H1 states that there is a positive effect of framing on career selection decisions of accounting students of Airlangga University. Based on the results of statistical tests conducted, framing has a positive and significant impact on career selection decisions. The result of the linear regression test showed significant value on the partial test of 0.034 with the direction of positive coefficient. Because this significant value is less than the required α of 0.05, H1 is accepted. Framing can affect decision makers in decision making because of the different ways to convey and manage the meaning of an information.

The result of this study supports previous research conducted by Ariyanto and Sukirno (2016) which shows that framing has a positive influence on the decision of job selection on accounting students of Yogyakarta State University. This makes some accounting students of Yogyakarta State University choose jobs outside the field of accounting because of the positive influence of framing. This is also supported by research on framing conducted by Yahya and Surya (2013) that the framing effect has an influence on investment decisions, especially to students. This indicates that an inexperienced subject may be affected by framing information or framing.

H2 states that there is a positive groupthink influence on career selection decisions in accounting students of Airlangga University. Based on the results of statistical tests that have been done, groupthink proved to have a positive and significant impact on career selection.
selection decisions. The result of the linear regression test showed significant value on the partial test of 0.000 with the direction of positive coefficient. Since this significant value is less than the required $\alpha$ of 0.05, then the proposed $H2$ is accepted, meaning that groupthink has an influence on career selection decisions.

The results of this study support previous research conducted by Ariyanto and Sukirno (2016) which showed that groupthink positively affects the decision on the selection of jobs of Yogyakarta State University students. The results of this study indicate that groupthink influences career selection decisions. It is supported by research by Hapsari (2013), which showed that there are differences between individuals and groups in terms of ethical decisions. Individuals are more likely to be ethical and choose extreme action when facing a problem while groups tend to be neutral. This is also supported by research conducted by Handoko (2007) stating that there is an influence of non-financial information on decision making, as well as negative impacts caused by group decisions.

Kreitner and Kinicki (2000) call groupthink one of the threats of group decisions that have an impact on the rejection of an alternative (of capital investment) due to the bias of the latest information obtained. Thus, this study does not support the Irwanti and Muhamar (2015) study which states that there is no difference in the decision-making process of different groups of educational levels.

Both independent variables of framing and groupthink in this study can simultaneously influence career selection decisions. Both of these factors will cause accounting graduates to work not in accordance with their study field due to the positive influence of framing and groupthink in career selection decisions.

Conclusions

Based on the analysis tests that have been done to the variables studied, the conclusions obtained are:

1. framing has a positive and significant impact on the career selection decision of Airlangga University’s accounting students in the eighth semester of English class, students in the eighth semester of regular class and students in the fourth semester of degree change class;

2. groupthink has a positive and significant impact on the career selection decision of Airlangga University’s accounting students in the eighth semester of English class, students in the eighth semester of regular class and students in the fourth semester of degree change class; and

3. framing and groupthink simultaneously have a positive and significant impact on the career selection decision of Airlangga University’s accounting students in the eighth semester of English class, students in the eighth semester of regular class and students in the fourth semester of degree change class.

References


Further reading


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Changes of PTKP, PPh, PPN and PPnBM: its linkages on DJP East Java II

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Abstract

Purpose – The purpose of this paper is to know the relevance between the changes in non-taxable income with the receipt of Income Tax Article 21, Income Tax Article 25/29, the receipt of value added tax and the receipt of luxury sales tax r (PPnBM).

Design/methodology/approach – Changes in non-taxable income have potentially reduced the receipt of Income Tax Article 21, Income Tax Article 25/29 of individual taxpayers, otherwise it increased value added tax and luxury sales tax receipts. This study used the descriptive qualitative approach, by conducting a simple case study based on actual data. Data analysis technique used is descriptive statistics and comparison analysis. Research conducted at the Kantor Wilayah Direktorat Jenderal Pajak Jawa Timur II.

Findings – The results show that the changes of non-taxable income in 2013 and 2015 did not affect the receipt of Income Tax Article 21 but the growth is slowed, while the receipt of Income Tax Article 25/29 increased.

Originality/value – Value added tax and luxury sales tax receipts, increasing every year, slowed down in 2013, but increased higher in 2015.

Keywords Income Tax Article 21, Income Tax Article 25/29, Luxury sales tax, Non-taxable income, Value added tax

Paper type Research paper

Introduction

The government has been enforcing various tax instruments, one of which is granting tax incentives. A incentive given by the government is non-taxable income (PTKP). A press release from the Ministry of Finance of the Republic of Indonesia (2015) states that some considerations were made for this adjustment of non-taxable income (PTKP), such as increasing the adjusted Provincial Minimum Wage (UMP) and Regency/City Minimum Wage (UMK) in almost every region, significantly shifting price for necessities as a result of Subsidize Oil Fuel (BBM) adjustment policy, and also decelerating the trend of economic conditions. These policies were aimed at increasing the people’s purchasing power; this could affect consumption rate and economic growth positively.

The terms of this adjustment of non-taxable income (PTKP) were constructed several times. From 1983 until 1999, provisions of PTKP were set in the Constitution of the Republic of Indonesia Number 7 of 1983 on Income Tax, and, recently, Ministry of Finance Regulation Number 122/PMK.010/2015 on the Adjustment of the Amount of Non-Taxable Income has been enacted.

Changes in non-taxable income have potentially reduced the receipt of Income Tax Article 21 and Article 25/29. On the other hand, these changes could hike up the take-home pay of tax bearers because of the less income tax payable to increase disposable income. A higher disposable income would liven up the aggregate demand so that Value Added Tax (PPN) and Sales Tax on Luxurious Goods (PPnBM) receipt also go up. Furthermore,
a higher take-home pay for tax bearers does not mean that the earned income will be fully used as the disposable income; however, it could increase a tax bearer's saving. Nevertheless, the logic theory will not be the same as the reality itself. The research evidence showing this, like from Nuritomo (2011), Aprilina (2013), Ahmad (2014) and Andiyanto (2014), will be explained further.

The Regional Office of Directorate General of Tax of East Java II has a working area of East Java province, in the north, besides Surabaya, which contains 16 districts and 2 cities and supervises a Tax Office and 14 Pratama Tax Offices. In addition, the number of registered individual taxpayers grew above 600,000 in 2004 and 1m in 2015. A descriptive qualitative approach with the study case method, which was conducted at the Regional Office of Directorate General of Tax of East Java II, is used for this research. Whereas, the data analysis technique used is descriptive statistics for describing or figuring out the collected data as it is, without making general conclusions, and also a comparative analysis is done in terms of affecting other factors in the given periods.

The next section of this paper provides the results of the research on the linkages between non-taxable income with Income Tax Article 21, Income Tax Article 25/29 for individual taxpayers, value added tax and luxury sales tax. The second section explains the literature review used, like relevant taxation conditions and previous studies with a similar topic. Next, the method used in this study is explained. Then, the research results in answering the research problems are explained. The paper ends with a conclusion.

Note that for the remaining part of the paper, non-taxable income will be shortened to PTKP, Income Tax Article 21 will be shortened to PPh Article 21, Income Tax Article 25/29 for individual taxpayer will be shortened to PPh Article 25/29 OP, value added tax will be shortened to PPN, and, lastly, sales tax on luxurious goods will be shortened to PPnBM. The choice of abbreviations is based on the original terminology of taxation in Indonesia. We believe that using these abbreviations will facilitate the Indonesian readers in understanding the contents of this paper.

**Literature review**

*Non-taxable income (PTKP)*

Non-taxable income (PTKP) is the given amount of income that is not subject to tax. PTKP is the income deduction for each individual taxpayer as a living cost, this goes along with Ilyas and Suhartono’s (2011, p. 62) explanation. According to Andiyanto (2014, p. 3), if the net income of an individual taxpayer from his/her job is under the amount of PTKP, he/she will not be charged the PPh Article 25/29 and if he/she is a worker/employee or recipient of income as the object of PPh Article 21, so that income shall not be cut down PPh Article 21. The comparison from the change of rules regarding the adjustment of the amount of PTKP is provided in Table I.

**Inflation**

Inflation is simply interpreted as increasing prices in general and continually. The opposite of inflation is deflation, which occurs when the price level falls. The rate of inflation is the rate of change in the price level, which is usually calculated as the percentage of change per year, and is measured as follows:

\[
\text{Inflation rate (year } t \text{)} = \frac{\text{Price level (year } t \text{)} - \text{Price level (year } t - 1 \text{)}}{\text{Price level (year } t - 1 \text{)}} \times 100.
\]

Samuelson *et al.* (2003, pp. 118-120) explain that the price level is the average weighing of prices of different goods and services within an economy. The government calculates the price level by compiling the price index, which is the average price of goods and services.
The price index is divided into three types. First, the consumer price index measures the cost of purchasing a standard basket of goods at different times. Second, the GDP deflator is the price of all goods and services produced within the country (consumption, investment, government spending and net exports) rather than a single component (such as consumption). Finally, the producer price index (PPI) is used to measure price levels at the wholesale or producer stage. The fixed scales used to calculate PPIs are the net sales of each commodity.

Impact of PTKP changes to PPh, PPN, and PPnBM receipt
Nuritomo (2011), in his research at KPP Yogyakarta Satu, found that the increase in PTKP affected the decrease in PPh Article 21 but did not affect the receipt of PPhOP, PPN and PPnBM. Research by Aprilina (2013) conducted at the Regional Office of the Directorate General of Tax of East Java I stated that the increase of PTKP negatively affected the receipt of PPhOP and PPh Article 21 in 2009, but did not have a negative impact when the PMK No. 564/KMK.03/2004 in 2005 and PMK No. 137/PMK.03/2005 in 2006. While the receipt of PPN and PPnBM tends to fluctuate, this does not follow the trend of PTKP increment. The research conducted by KPP Pratama Gorontalo by Fitri Ahmad (2014) explained that the change of PTKP applied positively affected the receipt of PPh Article 21 in KPP Pratama Gorontalo 37.9 percent, while the rest, equal to 62.1 percent, was influenced by other variables. In addition, research by Andiyanto (2014) conducted in two KPPs, namely, KPP Pratama Malang Selatan and KPP Pratama Banyuwangi, revealed that PTKP change does not lead to a decrease in the growth rate of the number of new WP OP. Changes in PTKP resulted in the receipt rate of PPh 21 in KPP Pratama Malang Selatan decreasing, but KPP Banyuwangi actually increased. The change of PTKP did not result in the decrease of realization of PPh 25/29 OP in KPP Pratama Malang Selatan and KPP Pratama Banyuwangi.

<table>
<thead>
<tr>
<th>Description</th>
<th>Individual taxpayer</th>
<th>Married</th>
<th>Wife’s income combined with husband’s income</th>
<th>Dependent family members within blood related</th>
</tr>
</thead>
<tbody>
<tr>
<td>UU No. 7 Tahun 1983 (1984–1993)</td>
<td>Rp960,000.00</td>
<td>Rp480,000.00</td>
<td>Rp960,000.00</td>
<td>Rp480,000.00</td>
</tr>
<tr>
<td>KMK RI No. 928/KMK.04/1993 (1994)</td>
<td>Rp1,728,000.00</td>
<td>Rp864,000.00</td>
<td>Rp1,728,000.00</td>
<td>Rp864,000.00</td>
</tr>
<tr>
<td>UU No. 10 Tahun 1994 (1995–1998)</td>
<td>Rp1,728,000.00</td>
<td>Rp864,000.00</td>
<td>Rp1,728,000.00</td>
<td>Rp864,000.00</td>
</tr>
<tr>
<td>KMK RI No. 361/KMK.04/1998 (1999–2000)</td>
<td>Rp2,880,000.00</td>
<td>Rp1,440,000.00</td>
<td>Rp2,880,000.00</td>
<td>Rp1,440,000.00</td>
</tr>
<tr>
<td>UU No. 17 Tahun 2000 (2001–2004)</td>
<td>Rp2,880,000.00</td>
<td>Rp1,440,000.00</td>
<td>Rp2,880,000.00</td>
<td>Rp1,440,000.00</td>
</tr>
<tr>
<td>PMK RI No. 564/KMK.03/2004 (2005)</td>
<td>Rp12,000,000.00</td>
<td>Rp6,000,000.00</td>
<td>Rp12,000,000.00</td>
<td>Rp6,000,000.00</td>
</tr>
<tr>
<td>PMK RI No. 137/PMK.03/2005 (2006–2008)</td>
<td>Rp13,200,000.00</td>
<td>Rp6,600,000.00</td>
<td>Rp13,200,000.00</td>
<td>Rp6,600,000.00</td>
</tr>
<tr>
<td>UU No. 36 Tahun 2008 (2009–2012)</td>
<td>Rp15,840,000.00</td>
<td>Rp7,920,000.00</td>
<td>Rp15,840,000.00</td>
<td>Rp7,920,000.00</td>
</tr>
<tr>
<td>PMK RI No. 162/PMK.011/2012 (2013–2014)</td>
<td>Rp24,300,000.00</td>
<td>Rp12,150,000.00</td>
<td>Rp24,300,000.00</td>
<td>Rp12,150,000.00</td>
</tr>
<tr>
<td>PMK RI No. 122/PMK.010/2015 (2015–2016)</td>
<td>Rp36,000,000.00</td>
<td>Rp18,000,000.00</td>
<td>Rp36,000,000.00</td>
<td>Rp18,000,000.00</td>
</tr>
</tbody>
</table>

Source: From various taxation rules and Income Tax Law is processed

The price index is divided into three types. First, the consumer price index measures the cost of purchasing a standard basket of goods at different times. Second, the GDP deflator is the price of all goods and services produced within the country (consumption, investment, government spending and net exports) rather than a single component (such as consumption). Finally, the producer price index (PPI) is used to measure price levels at the wholesale or producer stage. The fixed scales used to calculate PPIs are the net sales of each commodity.

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Research methods
The approach used in this research is qualitative; the design of research is descriptive qualitative and the case study method is used. This study focuses on a particular unit that sees the linkages between the change in non-taxable income with the receipt of PPh Article 21, PPh Article 25/29 OP, PPN and PPhBM at the Regional Office of Directorate General of Taxes East Java II in the period 2009–2015.

The scope of research
The scope for this research is the receipt of PPh Article 21, PPh Article 25/29 OP, PPN and PPhBM at the Regional Office of Directorate General of Tax East Java II, which supervises 15 Tax Service Offices (KPP) including KPP Madya Sidoarjo, KPP Pratama Sidoarjo Utara, KPP Pratama Sidoarjo Selatan, KPP Pratama Sidoarjo Barat, KPP Pratama Gresik Utara, KPP Pratama Gresik Selatan, KPP Pratama Mojokerto, KPP Pratama Lamongan, KPP Pratama Tuban, KPP Pratama Bojonegoro, KPP Pratama Madiun, KPP Pratama Ponorogo, KPP Pratama Ngawi, KPP Pratama Bangkalan and KPP Pratama Pamekasan. Research data were taken from the data period of 2009 to 2015 because the data before the year 2009 were manual data, so it was quite difficult to get the data because it would have taken time.

Place and time of research
The research was conducted at the Regional Office of Directorate General of Tax East Java II, which is located at Jalan Raya Juanda No. 37 Semambung–Sidoarjo 61,254. The period for the research was from January to April 2016.

Types and data sources
The type of data collected in this study is quantitative and qualitative data. Quantitative data are data of target reports and realization of tax revenue in the period of 2009–2015, PPh Article 21, PPh 25/29 OP, PPN and PPhBM period 2009–2015 at Regional Office of Directorate General of Tax East Java II and other data related to this research. Meanwhile, qualitative data are the profile or history of the Regional Office of Directorate General of Tax East Java II establishment, the organizational structure, interview results with interviewees or employees who understand the research problem, as well as supporting literature and other data in this research.

The data sources used in this study are primary and secondary data. Primary data are results from interviews with individuals or the employees of the Regional Office of Directorate General of Tax East Java II. The secondary data in this research are Taxation Law, Regulation of Minister of Finance, Director General of Tax Regulation, literature books, journals, etc.

Data collection procedures
The data collection procedure begins with the Preliminary Survey, conducted to obtain a general description of the Regional Office of the Directorate General of Tax East Java II, and the investigation object is to find the problem of the relationship between the change of non-taxable income with receipt of PPh Article 21, PPh Article 25/29 OP, PPN and PPhBM. The next is a literature study to obtain the basic theory regarding the regulation in the change of PTKP, PPh Article 21, PPh Article 25/29 OP, PPN and PPhBM. The last is a field survey to obtain data or information directly from the Regional Office of Directorate General of Tax East Java II, which is useful for solving research problems. The field survey was conducted by interviews, observations and documentaries.
Analysis technique

The data analysis techniques used in this study are descriptive statistics and comparative analysis. Comparative analysis is used to know, see and compare the change in the target growth rate and realization, as well as the level of receipt of PPh Article 21, PPh Article 25/29 OP, PPN and PPnBM each year during the period 2009–2015, using the previous year as a comparison. Growth rates and achievement rates are calculated as a percentage, and are measured as follows:

Growth Rates Target/Realization Revenue (year \( t \))

\[
\text{Growth Rates Target/Realization Revenue (year } t \text{)} = \frac{\text{Target/Realization Revenue (year } t \text{)} - \text{Target/Realization Revenue (year } t - 1 \text{)}}{\text{Target/Realization Revenue (year } t - 1 \text{)}} \times 100\%
\]

Achievement Rates upon Target Revenue (year \( t \))

\[
\text{Achievement Rates upon Target Revenue (year } t \text{)} = \frac{\text{Realization of Revenue (year } t \text{)}}{\text{Target of Revenue (year } t \text{)}} \times 100\%.
\]

Data analysis on the discussion was conducted in 2012 due to the changes in non-taxable income applied in 2013 and 2015. However, the data for the period of 2009–2011 are also analyzed and interpreted in terms of the effects that occur on the receipt of PPh Article 21, PPh Article 25/29 OP, PPN and PPnBM in the years after the enactment of the change of non-taxable income to various factors.

The steps taken by obtaining and collecting reports or data receipt of PPh Article 21, PPh 25/29 OP, PPN and PPnBM period 2009–2015 from the Regional Office of Directorate General of Tax East Java II, processing or organizing data as well as comparing PPh data for the period 2009–2015 then presents it on the year to year basis and inter-KPP, analyzing and interpreting the processed data that has been done and the factors which are affected in the change of PPh Article 21, PPh 25/29 OP, PPN and PPnBM within assisted interview results from employees of the Regional Office of Directorate General of Tax East Java II, and giving conclusions and suggestions based on results of the data analysis.

Results and discussion

Profile of Regional Office of Directorate General of Tax East Java II

Based on the Regulation of the Ministry of Finance No. 206.2/PMK.01/2014 on Organization and Working Procedure of Vertical Institution of Directorate General of Taxation, Regional Office of Directorate General of Tax East Java II supervises one Tax Service Office (KPP) Madya, namely, KPP Madya Sidoarjo. It also oversees 14 Tax Service Offices (KPP) Pratama and seven Extension Services and Taxation Consultation Office (KP2KPP). Each KPP Pratama has administrative areas, such as KPP Pratama Bojonegoro serving tax activities for Bojonegoro and KPP Pratama Lamongan for Lamongan.

Income Tax Revenue Article 21 period 2009–2015

PTKP in the period of 2009–2015 has changed twice (Table I). Details of Income Tax Article 21 period 2009–2015 on 14 KPP Pratama and one of KPP Madya in the Regional Office of Directorate General of Tax East Java II are presented in Figure 1 and Table II.

Based on the data in Figure 1, it can be seen that the revenue of Income Tax Article 21 in 2009 to 2012 experienced growth with varying levels. The changes in PTKP that occurred in 2009 with the enactment of Law No. 36 of 2008 should have a decreasing effect on the realization of PPh Article 21 in the year of its enactment and subsequent years. Increase in PTKP causes the taxable income to be decreased so that the amount of...
PPh Article 21 that is deposited is also decreased. However, in most of the KPPs in the Regional Office of the Directorate General of Tax East Java II, the income tax revenue of Article 21 increased in 2010 to 2012, and also in 2014. This increase is caused by change in UMK (Minimum Wage City/District), as well as salary payments of PNS, TNI and POLRI increased every year.

In 2013 and 2015, most of PPh revenues of Article 21 of the Tax Office experienced lower growth than in the previous year due to the rise in PTKP and the declining employment rate. However, slower performance is temporary. In 2014, the revenue of PPh Article 21 was due to almost all of the KPP experiencing higher growth compared to the previous year.

The target of PPh receipts Article 21 tends to increase during the period of 2009–2015. However, in 2014, it decreased by 4.74 percent due to the growth of realization of PPh Article 21 in 2013 which only amounted to 9.69 percent and the achievement of the realization of PPh Article 21 target for 2013 was 8.01 percent lower than the previous year. In 2011, revenue realization experienced a growth of only 16.66 percent due to the large decline in the number of the working population. The growth in 2012 amounted to 17.70 percent and in 2014, it amounted to 20.79 percent influenced by an increase in UMK as well as basic salaries of PNS, TNI and POLRI. The growth of realization is lower than the previous year 2013, which amounted to 9.69 percent and in 2015, which only amounted to 8.33 percent compared to the previous year due to the enactment of regulation of PTKP adjustments.
according to the PMK No. 162/PMK.011/2012 and No. 122/PMK.010/2015 in 2015, as well as the termination of employment which seems quite influential on the performance of PPh Article 21 revenue in that year.

**Income Tax Revenue Article 25/29 of individual person period 2009–2015**

The details of the comparison between the receipt of PPh Article 25/29 of the individual person and the number of registered and effective individual taxpayers for the period 2009–2015 in each KPP Pratama in the Regional Office of the Directorate General of Tax of East Java II are presented in Figures 2–4.

Based on the data obtained from the Regional Office of the Directorate General of Tax East Java II, from 14 KPP Pratama, the number of registered OP taxpayers in each KPP always increases with different growth rates each year. Most registered OP taxpayers are at

![Figure 2. Income Tax Revenue Article 25/29 of individual person period 2009–2015](source)

![Figure 3. Number of registered individual taxpayers period 2009–2015](source)
KPP Pratama Mojokerto, which reached 198,156 OP taxpayers. The change in PTKP is directly proportional to the number of registered OP taxpayers in each KPP Pratama at the DJP Regional Office of East Java II, as well as the number of effective OP taxpayers. However, the increase in the number of registered OP taxpayers and effective OP taxpayers is not always directly proportional to the revenue of PPh Article 25/29 OP.

Based on Table III, the target of PPh Revenue Article 25/29 OP fluctuates every year. In 2013, to coincide with the enactment of changes in PTKP according to PMK No. 162/PMK.011/2012, the realization of PPh Article 25/29 OP experienced a growth of 10.00 percent, in line with the increasing number of WP OP registered and effective. Realization of PPh Article 25/29 OP 2014 decreased by 12.21 percent, which was influenced by the new type of payment of PPh Final 1 percent in accordance with PP No. 46 of 2013 on the income tax on income from the business received or obtained by taxpayers who have certain gross distribution. While in the year 2015, the performance of PPh Revenue Article 25/29 OP reached 82.38 percent growth because it was influenced by the implementation of PMK No. 91/PMK.03/2015 on the Reduction or Elimination of Administrative Sanctions for Delay in Submission of Notification Letter, Revision of Notice Letter, and Delay of Payment or Tax Deposit. The existence of the enforcement of this rule caused the individual taxpayers in droves to pay or settle tax payable PPh Article 25/29 OP.

<table>
<thead>
<tr>
<th>Year</th>
<th>Target (Rp)</th>
<th>Increase/Decrease (%)</th>
<th>Realization (Rp)</th>
<th>Increase/Decrease (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>64,391,708,000</td>
<td>–</td>
<td>49,487,412,017</td>
<td>–</td>
</tr>
<tr>
<td>2010</td>
<td>61,546,183,000</td>
<td>–4.42</td>
<td>57,541,013,481</td>
<td>16.27</td>
</tr>
<tr>
<td>2011</td>
<td>70,741,270,000</td>
<td>14.94</td>
<td>91,537,138,624</td>
<td>59.08</td>
</tr>
<tr>
<td>2012</td>
<td>109,959,843,552</td>
<td>55.44</td>
<td>62,940,532,318</td>
<td>–31.24</td>
</tr>
<tr>
<td>2013</td>
<td>159,160,969,000</td>
<td>44.74</td>
<td>69,234,208,265</td>
<td>10.00</td>
</tr>
<tr>
<td>2014</td>
<td>76,796,279,989</td>
<td>–51.75</td>
<td>60,777,208,174</td>
<td>–12.21</td>
</tr>
<tr>
<td>2015</td>
<td>71,792,867,000</td>
<td>–6.52</td>
<td>110,849,642,892</td>
<td>82.38</td>
</tr>
</tbody>
</table>

Source: Regional Office of Directorate General of Tax East Java II’s data, processed by writer.

Table III. Increasing/decreasing target and realization revenue of PPh Article 25/29 OP period 2009–2015 on Regional Office of Directorate General of Tax East Java II
Revenue of PPN and PPnBM period 2009–2015

The graph of PPN and PPnBM revenues from 2009 to 2015 in 14 Tax Office (KPP) Pratama and 1 Tax Office (KPP) Madya in the Regional Office of Directorate General of Tax East Java II is presented in Figure 5.

Based on the data in Figure 5, it can be seen that the revenue of PPN and PPnBM in the period 2009–2015 fluctuated, not following the trend of changes in PTKP. This can be demonstrated in 2009 until 2012 after the enactment of new PTKP in accordance with Law No. 36 Year 2008, as well as in 2014 after the enactment of new PTKP according to PMK RI 162/PMK.011/2012, the realization of PPN and PPnBM revenue fluctuated in all KPP. In 2013, the new PTKP came into force and the receipt of PPN and PPnBM of several KPPs has decreased. It is also due to a high inflation rate. Whereas in 2015, the realization of PPN and PPnBM revenues increased with varying growth rates due to the implementation of PMK No. 122/PMK.010/2015 and the rate of inflation decreased from the previous year.

Based on Table IV, the realization of PPN and PPnBM revenues period 2009 until 2015, PPN and PPnBM receipts reached 100 percent of the target only once: in 2012, it amounted to 112.71 percent. This is in line with the economic growth rate of East Java in 2012, which reached the highest growth rate in the period 2009–2015, that is 5.01 percent (2009), 6.67 percent (2010), 7.23 percent (2011), 7.27 percent (2012), 6.55 percent (2013), 6.1 percent (2014) and 5.44 percent (2015).

<table>
<thead>
<tr>
<th>Tahun</th>
<th>Target (Rp)</th>
<th>Realisasi (Rp)</th>
<th>Persentase Pemenuhan Target (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>2,478,074,520,000</td>
<td>2,326,607,806,864</td>
<td>93.89</td>
</tr>
<tr>
<td>2010</td>
<td>3,347,836,638,215</td>
<td>2,401,813,057,941</td>
<td>71.74</td>
</tr>
<tr>
<td>2011</td>
<td>3,391,851,187,586</td>
<td>2,972,572,077,165</td>
<td>87.64</td>
</tr>
<tr>
<td>2012</td>
<td>3,923,653,079,001</td>
<td>4,422,465,101,292</td>
<td>112.71</td>
</tr>
<tr>
<td>2013</td>
<td>5,575,212,160,998</td>
<td>5,011,725,030,781</td>
<td>89.89</td>
</tr>
<tr>
<td>2014</td>
<td>6,289,438,576,997</td>
<td>5,570,708,973,424</td>
<td>88.86</td>
</tr>
<tr>
<td>2015</td>
<td>8,284,284,975,000</td>
<td>6,834,800,426,728</td>
<td>82.50</td>
</tr>
</tbody>
</table>

**Source:** Regional Office of Directorate General of Tax East Java II’s data, processed by writer
While the achievement of the lowest PPN and PPnBM revenue occurred in 2010, it amounted to 71.74 percent. This is because the inflation rate in 2010 was quite high in the range of 6–7 percent, compared to the previous year which seemed to affect the achievement of PPN and PPnBM revenue in 2010.

The data in Table V show that the revenue of Income Tax Article 21 and Income Tax Article 25/29 OP increased in the years of implementation of PTKP. This also happened to the revenue of PPN and PPnBM. However, in 2013, PPN and PPnBM revenues only grew by 13.32 percent; lower than in the previous year, although the regulation on new PTKP was enacted in that year.

**Conclusion**

Based on the results of the research above, the increase of PTKP does not cause a decrease in the receipt of PPh Article 21 in 2013 when the enactment of PMK No. 162/PMK.011/2012, only the growth of PPh receipt Article 21 slows down; a similar trend was observed in 2015, when the PMK No. 122/PMK.010/2015 was enacted. After the enactment of Law Number 36 Year 2008, the PPh receipt Article 21 grew with varying levels following the economic conditions.

Increase in PTKP is proportional to the increase in the number of registered individual taxpayers and effective individual taxpayers. However, an increase in the number of registered individual taxpayers and effective individual taxpayers is not always proportional to the revenue of the PPh Article 25/29 OP. Coinciding with the increase of PTKP, the revenue of PPh Article 25/29 in 2013 and 2015 increased. Increase in PPh Revenue Article 25/59 also could not be separated from the intensification and extensification efforts, which were conducted by the Directorate General of Taxation.

Each year, PPN and PPnBM receipts tend to increase with varying growth rates and do not follow the trend of increasing PTKP. The revenues of PPN and PPnBM also cannot be separated from the economic conditions.

So it can be seen that the change in PTKP does not have a significant effect on the revenue of PPh Article 21, PPh Article 25/29, as well as PPN and PPnBM. This is because there are still other factors that influence the tax revenue, such as other tax policies and the competitive economy. Conversely, the effect of PTKP changes is proportional to the number of registered taxpayers and effective OP taxpayers. This research is expected to give input and consideration for Directorate General of Tax on the change of non-taxable income to improve its performance in trying to increase PPh Article 21, PPh Article 25/29 OP, PPN and PPnBM either through intensification or extensification.

<table>
<thead>
<tr>
<th>Year</th>
<th>PPh Article 21 (Rp)</th>
<th>Increase/ decrease (%)</th>
<th>PPh Article 25/29 OP (Rp)</th>
<th>Increase/ decrease (%)</th>
<th>PPN and PPnBM (Rp)</th>
<th>Increase/ decrease (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>1,073,240,478,976</td>
<td>–</td>
<td>49,487,412,017</td>
<td>–</td>
<td>2,326,607,806,864</td>
<td>–</td>
</tr>
<tr>
<td>2010</td>
<td>1,397,681,060,240</td>
<td>30.23</td>
<td>57,541,013,481</td>
<td>16.27</td>
<td>2,401,813,057,941</td>
<td>3.23</td>
</tr>
<tr>
<td>2011</td>
<td>1,630,567,437,374</td>
<td>16.66</td>
<td>91,537,138,624</td>
<td>59.08</td>
<td>2,972,572,077,165</td>
<td>23.76</td>
</tr>
<tr>
<td>2013</td>
<td>2,105,237,026,623</td>
<td>9.69</td>
<td>69,234,208,265</td>
<td>10.00</td>
<td>5,011,725,030,781</td>
<td>13.32</td>
</tr>
<tr>
<td>2014</td>
<td>2,542,952,699,629</td>
<td>20.79</td>
<td>60,777,903,174</td>
<td>–12.21</td>
<td>5,570,708,973,424</td>
<td>11.15</td>
</tr>
<tr>
<td>2015</td>
<td>2,754,834,888,193</td>
<td>8.33</td>
<td>110,849,642,882</td>
<td>82.38</td>
<td>6,884,800,438,728</td>
<td>22.69</td>
</tr>
</tbody>
</table>

*Source*: Regional Office of Directorate General of Tax East Java II’s data, processed by writer

Table V. Comparison in the changes of realization in PPh revenue article 21, PPh Article 25/29 OP, PPN and PPnBM period 2009–2015 on Office of Directorate General of Tax East Java II.
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Tax audit and tax productivity in Lagos state, Nigeria

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Abstract

Purpose – The purpose of this paper is to examine the impact of the tax audit on tax productivity in Lagos state, Nigeria. Specifically, the study analyzed trends of tax audit and tax productivity, and the impact of Desk audit, Field audit and Back-duty audit on tax productivity in Lagos state.

Design/methodology/approach – The study made use of both primary and secondary data. Primary data used in the study were collected with the use of questionnaires administered to 350 randomly selected staffs of Lagos state Internal Revenue Services, while secondary data used in the study were sourced from Federal Inland Revenue Service and Lagos Internal Revenue Service audit division in Lagos state over the period spanning from 2000 to 2015. Data collated in the study were analyzed descriptively using inferential methods such as unit root test, and estimation techniques such as Fully Modified Least Square (FMOLS) co-integration regression and Logit regression analysis.

Findings – The study revealed that Field tax audit, desk tax audit and Back duty tax audit exert a significant positive impact on tax productivity with reported estimate of 0.530454 (p = 0.0044 < 0.05) for FIDAUD, 0.774450 (p = 0.0085 < 0.05) for DEKAUD, 1.244317 (p = 0.0001 < 0.05) for BAKAUD.

Research limitations/implications – Relevant tax authority (RTA), tax auditors and FIRS staff members should have full knowledge of modern audit tools like Computer Aided Audit Tools (CAATs) to enhance performance and maximum tax revenue generation.

Practical implications – The study concluded that tax audit enhances the level of productivity of tax administration in Lagos state and that any form of tax audit has the tendency of influencing revenue accruing to the government from taxation positively. Hence, tax audit should be carried out on a routine basis to ensure that actual revenue collected is what the RTA remits to the government. Tax audit department should be given autonomy to carry out their responsibilities effectively.

Originality/value – This tax audit and tax productivity in Lagos state, Nigeria, fulfills an identified need to study how brand-supportive behavior can be enabled.

Keywords Logit regression, Back duty, Co-integration analysis, Desk tax audit, Field tax audit, Tax productivity

Paper type Research paper

1. Introduction

Taxation is not a new word in the world as a whole. In Nigeria, taxation has been in existence even before the coming of the colonial men or the British. Tax is one of the major sources of revenue to all levels of government. Taxation can be defined as a system of imposing a compulsory levy on all income, goods, services and properties of individuals, partnership, trustees, executorships and companies by the government (Samuel and Simon, 2011). In Nigeria, it is a factor to be reckoned with in Federal government’s budget, the taxes so
collected come back to the taxpayer in form of services. This has over the years encouraged or
discouraged some activities in the private sector; this depends on whether the policy of the
government is toward discouraging or encouraging such companies. Taxation is recognized
as a very important tool for national development and growth in most societies. It has been
viewed as a major vehicle for the long-term development of infrastructures of the state
(Brama and Festus, 2014).

Tax is as a veritable source of revenue to the government which is as good as nothing
when prospective and potential taxpayers default in payment. Naturally, the taxpayer is
always unwilling to pay his tax liability and therefore it needs to be motivated seductively
or by force into paying what is expected from them. Thus, the use of tax audit has, however,
helped in the generation of revenue to the government (Onoja and Iwarere, 2015). Kircher
(2008) stated that tax audit is the examination of tax report of an individual or
organization by the relevant tax authorities in order to ascertain compliance with applicable
tax laws and regulations of the state. In furtherance to this, he reported that tax audit is a
process where the Tax Authorities (Federal Inland Revenue Service and State Board of
Internal Revenue Services) confirm the numbers that you have put on your tax return.

Tax audit just like financial audit involves the gathering of information and processing it
for determining the level of compliance of an organization with tax laws of the territory
(Adediran et al., 2013). They stated further that tax audit and investigation includes desk
audit which is one in which the whole activity of the audit takes place within the confines of
the office of the tax officials, field investigation which involves physical verification of
documentary evidence and materials at the premises of a taxpayer so as to confirm the facts
and figures of the tax returns filed by corporate taxpayers and back duty audit which is
instituted when the following occurs: failure to disclose or include in full, any income or
earning in the return made available to the tax office; doubtful claim of capital allowance in
respect of current or previous year; reduction in the profit in the returns files in tax office,
where the tax charged or assessed is less than what it ought to be. The system of tax
auditing is imperative because it assists the government in collecting appropriate tax
revenue necessary for budget, maintaining economic and financial order and stability,
ensuring that satisfactory returns are submitted by the taxpayers, organizing the degree of
tax avoidance and tax evasion, ensuring strict compliance with tax laws by taxpayers,
 improving the degree of voluntary compliance by taxpayers and ensuring that the amount
due is collected and remitted to government (Nyakamba, 2014).

Due to the urge for an increase in revenue generation, FIRS made a reform that merged
its audit department with the investigation and intelligence division with the following
mandate investigation of civil and criminal cases and violations of tax laws; installation of
an effective database and efficient intelligence network; prosecution of violators of the tax
laws to serve as deterrence; and fostering closer working relationships with other
government agencies (Federal Inland Revenue Service, 2012). This as earlier said will have
an informed impact of the second generation of Nigerian government revenue. Onoja and
Iwarere (2015) disclosed that over the years, revenue derived from taxes has been very low
and no physical development actually took place. This cannot be far-fetched from the
quality of revenue administration which influences the investment climate and private
sector development, because firms consider the tax system when considering investments,
so also there is a high incidence of corruption within the taxes and customs administrations,
which makes the government suffer major revenue leakages, as a result, dishonest revenue
officials which allow unjustified tax breaks to willing tax evaders.

Reform of the revenue administration that includes efficient and effective tax audit may
be needed to enable it to keep up with the increasing sophistication of business activity and
tax evasion schemes. With globalization, goods and services are produced by taxable
entities in multiple countries. This presents vast opportunities for manipulating
transactions to reduce the tax burden. Without a matching increase in the professional and technological capacity of the revenue administration, the existence of corruption, tax havens and increasing use of electronic financial transactions will continue to pose major challenges in enforcing the tax laws. This will further reduce the chances of monitoring taxable activity and countering tax evasion. For this reason, tax audit plays an important role to increase the capacity of revenue generation (Opoku, 2015). Based on the above, this study examines the impact of tax productivity in Lagos state, Nigeria.

2. Literature review

2.1 Tax audit

Adediran et al. (2013) opined that tax audit just like financial audit involves the gathering of information and processing it for determining the level of compliance of an organization with tax laws of the territory. For a successful audit, it is necessary that the auditor organizes his work in such a way that the assignment is accomplished completely and efficiently. According to Chude and Chude (2015), tax means “money that you have to pay to the government so that it can be paid for public services.” He also defined Audit as “an official examination of business and financial records to see that they are true and correct.” The Association of Chartered Certified Accountants defined an audit as an exercise which provides assurance to the shareholders and other stakeholders of a company on the financial statements because it is independent and impartial. Onoja and Iwarere (2015) opined that tax audit and investigation which involves the inspection and treatment carried out by tax agencies authorized by law on the level of compliance of taxpayers to the law through the review of its financial records has helped the government in the generation of revenue.

2.2 Theoretical literature

2.2.1 Theory of tax performance/theory of tax productivity. In the assessment of tax productivity or performance, two measures are normally applied. These are buoyancy of tax revenue and income elasticity of tax. The former could be defined as the positive response of tax revenue to the combined effects of automatic growth, i.e. growth emanating from economic activities and the growth resulting from discretionary changes in tax rates and rules. The latter refers to changes in tax revenue due to changes not only in income but also other discretionary changes in tax revenue due to changes in tax policy. Most of the studies so far undertaken have directed their attention at the built-in flexibility of the tax structure either with the application of discretionary measures or when the rates are constant. Examining the income elasticity of the Indian tax structure, Sahota utilized the regression equation:

\[ Y = aX^\beta, \]

or:

\[ \log Y = \log a + \beta \log X, \]

where the coefficient “\(a\)” denotes the level of the tax yield on \(Y\) when the independent variable \(X\) is zero, and the coefficient “\(\beta\)” gives the elasticity. According to him, the \(\beta\) coefficient signifies the percentage of change in the independent variable \(X\). This model is the basic performance or productivity approach to determining the elasticity or otherwise of individual tax sources and the tax structure as a whole with respect to tax bases and GDP. Though several refinements have been embarked upon, they could be regarded as cosmetic as they have not drastically altered the intention or end product of the above model.
The productivity or performance model adopted in this study is akin to that employed by Kusi for the estimation of the Ghanaian tax system. The point of departure of the present study is the replacement of buoyancy for elasticity in the decomposition process of tax to base and base to income, thereby eliminating the elasticity approaches which require the isolation of the impact of discretionary tax measures. This approach was preferable, partly for the peculiar reasons advanced above and mostly because discretionary tax change is a pervasive phenomenon in Nigeria’s budgetary process. Pervasive because in 1987, the company income tax rate was reduced from 45 to 40 percent, capital allowances and tax-free dividends were provided for manufacturers. In 1993, excess duty was abolished, except those on tobacco and alcohol, while annual income under N 5,000 because tax free with the highest marginal rate stepped down from 45 to 35 percent. Excise duties were re-introduced on some products in 1994 and value-added tax came into effect the same year. Also, withholding tax rents, interest, and dividends among others were raised from 5 to 10 percent in the same 1994 budget. This pervasion in the Nigeria tax system has a long history from 1980 to date.

The productivity or performance model was directed at investigating the buoyancy of the Nigeria tax system, through a detailed assessment of the contributions of individual taxes to total tax collections and to GDP. The choice of buoyancy criterion is informed by the apparent deficiencies observed in purging tax revenues of the impact of discretionary tax changes through the proportional adjustment method which was originally developed by Presto in (1962) and the dummy variable technique utilized by Khan. Like the Sahota model, proxy bases were also adopted for the buoyancy methodology mainly due to the decomposition of income buoyancy into tax-to-base buoyancy and base-to-income buoyancy. The proxy base taken for petroleum profit tax was the total value of crude oil, and for Company Tax, it was Corporate Current Income. The proxy base for customs and excise duties is a combination of the total value of imports, exports, and manufacturing, while the proxy bases taken separately for excise and import duties were total value added tax that was the total consumption expenditure.

The model utilized in our evaluation of the performance or ability of the Nigerian tax system to generate expected revenue is the buoyancy criterion. The buoyancy of each tax was broken into two components: the buoyancy of the tax to the base and the buoyancy of base income. The model was applied to a time-series data from 1981 to 2009, covering the pre-and post-structural adjustment program periods. Proxy bases for the total value of import and the total value of manufacturing were chosen for import and excise duties, respectively. Ordinary least squares (OLS) technique was utilized in estimating the equations.

2.3 Review of empirical literature

Anyaduba and Modugu (2014) studied the impact of tax audit and other qualitative attributes on the tax compliance level of companies in Nigeria. Questionnaires were administered to staff of sampled companies in selected states from five geopolitical zones of Nigeria. Ordered Logistic Regression technique was employed to analyze the responses. The result showed that there exists a positive relationship between tax audit and tax compliance. The result also revealed that the probability of being audited, perception on government spending, penalties and enforcement, the joint effect of tax audit and penalties have a tendency to significantly influence tax compliance in Nigeria. Badara assessed the effect of the tax audit on tax compliance in Nigeria – a case of Bauchi State Board of Internal Revenue. The methodology employed for data collection is the only primary source, which involved the use of questionnaires, in which 48 questionnaires were administered to the staff of Bauchi State Board of Internal Revenue, some selected individuals taxpayers and corporate bodies within Bauchi State out of which only 42 questionnaires were completed.
and returned. The data generated for the study were interpreted using simple percentage. The main findings of the study are that: the Relevant Tax Authority (RTA) employed tax audit toward achieving target revenue, tax audit reduce the problems of tax evasion and taxpayers do not usually cooperate with tax audit personnel during the exercise. Adediran et al. (2013) examined the impact of tax audit and investigations on revenue generation in Nigeria. Data were collected from the primary sources from 410 respondents who are the staff of the Federal Inland Revenue Service and Edo State Board of Internal Revenue and tested with Pearson Correlation Coefficient. The findings are that tax audit and investigations can increase the revenue base of the government and can also stamp out the incidents of tax evasion in the country. Onoja and Iwarere (2015) explored the effects of the tax audit on revenue generation in Federal Inland Revenue Service. The population of the study consists of the staff of the Federal Inland Revenue Service, Abuja, and Taru Yamane sampling technique was used to determine the sample size. The questionnaire was used to generate the data and was tested using Analysis of Variance (ANOVA). Findings revealed that: tax audit has significant effects on revenue generation in Federal Inland Revenue Service and tax audit has a positive relationship with the revenue generation in Federal Inland Revenue Service.

Soyinka et al. (2016) studied tax audit determinants and corporate tax compliance in Nigeria using survey research design, descriptive statistics, correlation and least square regression. The findings revealed a significant impact of tax audit probability and frequency of tax audit on corporate tax compliance. Kennedy (2014) examined the impact of tax audit on tax compliance in Nigeria. Questionnaires were used in gathering data while ordered logistic regression technique was used in data analysis. The result showed that there exists a positive relationship between tax audit and tax compliance. The result also revealed that the probability of being audited, perception on government spending, penalties and enforcement, the joint effect of tax audit and penalties have a tendency to significantly influence tax compliance in Nigeria. Appah and Eze (2013) studied causality analysis between tax audit and tax compliance in Nigeria. Data were derived from both primary and secondary sources. The data were subjected to diagnostic tests and analyzed with augmented dickey-fuller, ordinary least square and Granger causality. The empirical analysis exhibited a significant relationship between random tax audit, cut-off tax audit and conditional tax audit on tax compliance in Nigeria. Despite the empirical pieces of evidence of the impact of the tax audit on tax compliance and tax evasion, the study is faced with challenges of determining the impact of tax audit (desk audit, field audit and back duty) on the tax compliance, productivity and remittance to the tax authority in south-west Nigeria.

3. Research method
Qualitative and quantitative design was used in this study because both secondary and primary data were utilized in the study. The data used in this study are secondary in nature and they are quarterly. Quarterly data adopted in the analysis of this study spanned from 2000 to 2015 and were sourced from FIRS and LIRS audit division in Lagos state. The research instrument was structured questionnaire. The study adopted and modified the questionnaire as stated by Opoku (2015), who studied the role of a tax audit in revenue mobilization in Ghana revenue authority-the case of Ashanti region. The modified questionnaire was structured into five sections. Section A took into consideration the Demographic variables of respondents. Section B considered objective 1, Section C considered objective II, while Section D took into consideration objective III. However, a questionnaire was administered as used by Mutarindwa and Rutikanga (2014) to measure the growth in tax revenue in Rwanda. The questionnaire was open and close-ended, the response on the latter was ranked using the five-point Likert scale which ranged from “Strongly Agree” to “Agree” to “Undecided to Disagree” and to “Strongly Disagree.”
while the former was on a free opinion of respondents. Both descriptive and inferential statistics were employed in analyzing the relevant data gathered for the study. Descriptive statistics include frequency counts and percentages, while inferential statistics were in the form of ordered logistic regression.

The study adopts the work of Soyinka et al. (2016) model which took its roots from classical theory of tax compliance with modification both in the dependent and independent variables. Thus, the model for this study is specified as follows:

\[ \text{TAXPROD} = f(\text{DSKAUD, FIDAUD, BAKAUD}). \]  

(3.1)

Explicitly, it can be re-stated as follows:

\[ \text{TAXPROD} = \beta_0 + \beta_1 \text{DSKAUD} + \beta_2 \text{FIDAUD} + \beta_3 \text{BAKAUD} + \mu, \]  

(3.2)

where TAXPROD = tax productivity (tax revenue is used as proxy for tax productivity), DSKAUD = desk audit, FIDAUD = field audit, BAKAUD = back duty audit, \( \beta_0 \) = intercept, \( \beta_1 \) - \( \beta_3 \) = shift parameters/slope of the regression line, explained (dependent) variable = TAXPROD, Explanatory (Independent) variables = DSKAUD, FIDAUD, BAKAUD.

4. Results and discussion

4.1 Unit root test

Table I reveals that all the variables such as TAXREV, DEKAUD, FIDAUD and BAKAUD are not stationary at levels but they are made stationary at first difference. Therefore, condition for Johansen co-integration is met. This prompts the study to proceed to co-integration analysis. The co-integration analysis is meant to examine the long-run relationship between desk auditing, field investigation auditing and back duty tax auditing and tax revenue.

4.2 Test for co-integration

The above co-integration test was performed using Engle-Granger which is one of the suitable long-run estimators for single equation model. The co-integration result in Table II showed a positive relationship between the explained variable (tax productivity proxy with tax revenue) and explanatory variables (field tax audit-FIDAUD, desk tax audit-DEKAUD and back duty tax audit-BAKAUD) in the long run as the result of the normalized co-integrating equation indicated as follows:

\[ \text{TAXREV} = 7.21 + 0.53 \text{FIDAUD} + 0.77 \text{DEKAUD} + 1.24\text{BAKAUD}. \]

The result also showed that a point change in field tax audit, desk tax audit and back duty tax audit will result in 0.53, 0.77 and 1.24 point change in tax productivity of Lagos state in the long run, respectively. All the explanatory variables (FIDAUD, DEKAUD and BAKAUD)
showed a significant impact on TAXREV in the long run with their respective $p$-values (0.0044, 0.0085 and 0.0001) lesser than 5 percent level of significance. Field tax audit-FIDAUD, desk tax audit-DEKAUD and back duty tax audit-BAKAUD explain 98 percent variation in TAXREV in the long run.

4.3 Descriptive analysis

Table III shows that 202 (57.7 percent) of the respondents are male, while 148 (42.3 percent) are female. This implies that there are more male staff than female in the agency. Item 2 in the table shows that 182 (52 percent) are married, 148 (42.3 percent) are single, while 20 (5.7 percent) are divorced. This indicates that there are many responsible staff in the agency. Table III shows that 42 (12 percent) are OND holders. In total, 98 (28 percent) are HND, 130 (37.1) are BSc holders, 49 (14 percent) are MSc, while the PhD and other professionals are 31 (9 percent) respondents. This implies that the staff members of the agency are well educated.

In Table IV, it could be inferred that if the explanatory variables (FIDAUD, DEKAUD and BAKAUD) signified a positive effect on the explained variable (TP) which implies a unit

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Item</th>
<th>Respondents</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>202</td>
<td>57.7</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>148</td>
<td>42.3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>350</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>182</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>148</td>
<td>42.3</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>20</td>
<td>5.7</td>
</tr>
<tr>
<td></td>
<td>Widow/widower</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>Total</td>
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<td></td>
<td>Other specify</td>
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<tr>
<td></td>
<td>Total</td>
<td>350</td>
<td>100</td>
</tr>
</tbody>
</table>

Table II. Co-integrating regression

Table III. Demographic information

Dependent variable: TAXREV
Method: fully modified least squares (FMOLS)
Date: October 1, 2017 Time: 14:28
Sample (adjusted): 2001 2015
Included observations: 15 after adjustments
Co-integrating equation deterministic: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
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<th>t-Statistic</th>
<th>Prob.</th>
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</tbody>
</table>

$R^2$: 0.983576
Adjusted $R^2$: 0.979097
SE of regression: 0.152146
Durbin–Watson stat: 1.839378

Note: Author’s Computation, 2017
change in any of the explanatory, it will result in a positive effect on tax productivity. The coefficient of field tax audit-FIDAUD is 0.459 (SE = 0.122, t = 3.75 and p < 0.05 level of significance). This depicts that an increase in the use of FIDAUD which involves limited desk audit through the examination of accounts and returns than any other type of tax audit will result to 0.459 significant positive effects on VAT in Lagos state. Desk tax audit -DEKAUD depicts a significant impact of 81.2 percent (p < 0.05) on PIT in Lagos state. This implies that a unit change in the whole activity of the audit takes place within the confines of the office of the tax officials where the tax office may simply request the taxpayers to provide some additional documents to his office to enable him clear some issues in the returns submitted that will result to 81.25 percent significant change in personal income tax (tax productivity). Back duty tax audit-BAKAUD which arises as a of failure to disclose or include in full any income or earning in the return made available to the tax office, doubtful claim of capital allowance in respect of current or previous year, reduction in the profit in the returns files in tax office and where the tax charged or assessed is less than what it ought to be and thereby have a direct impact on revenue performance as agreed indicates 1.31 (SE = 209 and p < 0.05 level of significance) impact on withhold tax (tax productivity) in Lagos state.

5. Conclusion and policy recommendations
Based on the findings of the study, it is concluded that tax audit variables enhance the level of productivity in tax administration in Lagos state which implies that adequate utilization of any form of tax audit will positively influence the revenue accruing to the government from taxation as a result of a reduction in the level of tax evasion, avoidance and an increase in voluntary compliance. Tax audit and investigation are critical to causing the taxpayer to be on their toes. This is particularly true for the taxpayer who is marginally complying and can easily be moved to the realm of tax evaders. Tax audit and investigation is also a means to protect government resources and make sure that defaulters do not go free for their offenses. In respect of the research findings, the study recommends that tax audit in the form of field, desk and back duty should be carried out on a routine basis to ensure that actual revenue collected is what the RTA remits to the government. Internal mechanism to check and monitor the staff of the tax audit department should be put in place to minimize the level of corruption and enhance the effectiveness of the tax audit. Tax audit department should be given autonomy to carry out their responsibility effectively as specified in Federal Inland Revenue Service Establishment Act 2007. RTA, tax auditors and FIRS staff members should have full knowledge of modern audit tools like Computer Aided Audit
Tools (CAATs) to enhance performance and maximum tax revenue generation. All relevant authority should encourage tax audit for an increase in tax revenue, in order for the government to keep up with its obligation to her citizen.

References


Further reading


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Impact of external and internal factors on management accounting practices: a study of Pakistan

Sidra Shahzadi, Rizwan Khan and Maryam Toor
University of Arid Agriculture, Rawalpindi, Pakistan, and
Ayaz ul Haq
Business Administration Department, Iqra University Islamabad Campus, Islamabad, Pakistan

Abstract
Purpose – The accounting system plays an important role in the company’s organizational structure. The purpose of this paper is to demonstrate that the integration of management accounting practices is subject to coordination between external and internal factors and accounting management practices.

Design/methodology/approach – Therefore, the authors move to the contingency model to determine the most significant external “unexpected factors” that explain the introduction of management practices for the management of the various stages of development. The exploratory study examines a sample of Pakistani companies from various sectors.

Findings – This study reveals that the main factors of uncertainty that affect the organizational structure, environmental uncertainty, advanced production technology, just-in-time method strategy, integrated management of quality and structure findings reveal that MAP affected all process and changes all system in simple to complex system in Pakistani’s industries.

Practical implications – This study is to acquisition the impact of external factors on management accounting practices, to find the impact of internal factors on management accounting practices, to establish the management accounting practices undertaken by the companies in Pakistan.

Originality/value – The study contributes to the literature by enhancing our understanding for the impact of external and internal factors on management accounting practices in Pakistan.

Keywords Environmental uncertainty, Contingency theory, Management accounting practices, External factors, Internal factors

Paper type Research paper

Background
Accounting is the process of keeping financial accounts of the organizations. Accounting is an information system for recording economics events. The development of accounting is closely related to writing, money and counting. The money and number may be related to the trading activities of temples.

Management accounting practice is how to use the information given by accounting for decision making. Many writers and researchers write about MAP to avail their own purposes (Shotter, 1999). Management accounting history consist of confirmation that “Lucca Paciolis” introduced double entry book recording system at that time all the people recognize importance for their businesses (Legaspi, 2014).

In previous years a lot of taking have been done to bring changing in MAP. In 1987, a researcher “Johnson” argued that there were not such changes are come in MAP until in
start of the twentieth century. After these types of criticism there are much management accounting techniques are developed in many organizations which include competitive strategy. Studies reveal that MAP affected all process and changes all system in simple to complex system. Studies also reveal that in which environmental MAP are to be practiced are changed which includes advancement in IT, complex markets, changed organization structure and new practices of management accounting (Kamal, 2015).

Johnson warned the accounting community for the first time that management and other users of information apparently no longer considered management accounting. There were a lot of prescriptive studies about changes in accounting systems, techniques and management practices (Johnson and Kaplan, 1987). More recently, professional accounting offices in the UK and the USA have funded research into changes in management accounting in companies in this country. In the UK, the Chartered Institute of Management Accounting (CIMA) give funds for a long-term study on the development of management accounting in 1995–1998 (Forsaith et al., 2003). Changing in manufacturing system of the organizations and introduced the new technology has increased the competition in the market among organization. It creates stress, risk and uncertainty for organizations. Managers are using MAP for getting the proper information to compete the organizations in the market. Management accounting system provides and monitors all historical information of organization which helps and assists its effort related to competitors.

The contingency theory on management accounting practices and explained that there is no single standard accounting practice that can be applied to all organizations (Otley, 1980). Basically, every organization will have its own accounting management practices. Theory examines a number of factors that support management when deciding on appropriate accounting practices. These factors can be either the technological changes or the infrastructure of an organization. For example, a food production company may want to change the technology used for a more modern, healthy and efficient way of handling, processing and packaging food. Thus, you can consider installing a computer-based system that massively produces its products. However, the type of specialized personnel required to manage such a complex appliance will influence the type of accounting practices selected and the cost of production. Management accounting practice helps to survive an organization in a competitive and ever-changing world because it provides a significant competitive advantage for a management company that supports motivational attitudes and make the necessary cultural values for the achievement of strategic goals. The management accounting mainly deals with the internal needs of the administration. The oriented assessment and development of future valuations in relation to traditional financial accounting, which focuses on historical data on legal economic issues such as ownership, investment, loans, taxation, regulation and the creation of reporting foundations external constant and conservative performance “in compliance with generally accepted accounting principles.” Flexibility is an essential feature of management control, because it means that particular attention has been paid to identifying key management needs, many of which may not be accurate (Gichaaga, 2014).

According to the Chandler in the nineteenth century, there were for the first time management accounting system in the USA. This Management Accounting System used simple and complicated accounting methods. To calculate the costs of direct work and the total cost of converting products into assets. Already in the first quarter of the nineteenth century, some companies in the USA, according to Porter (1980) used advanced expenditure accounts. New accounting systems for the monitoring and recording of cash inventories in this period have been developed, as well as for timely administration and a detailed expense declaration (Kamal, 2015). Total quality management assumes that agency employees must
work together to achieve quality for the needs of their clients. Quality can be achieved by controlling the production/service processes to avoid defects. TQM base on different values and beliefs which company’s staff explains with each other. The concept of quality has gone from an unrelated factor, based on imperfect market competition, to considering it as a strategic resource for companies (Gharakhani et al., 2013). Information is more important for decision making in manufacturing company and create awareness among the organizations that giving proper information is more necessary for effective decision (Gichaaga, 2014).

Given the great economic importance of internal and external factors and the economic gap. The purpose of this paper is to get an overview of using MAP in Pakistani companies, their role in the management of different sectors and to examine so many factors that lead to their use and their effect on management accounting practices. Our study has including following research questions:

**RQ1.** How is the encounter of Environmental uncertainty on MAP?

**RQ2.** What is the impact of internal factors on MAP?

Our main objectives of this study is to acquisition the impact of external factors on management accounting practices, to find the impact of internal factors on management accounting practices, to establish the management accounting practices undertaken by the companies in Pakistan. This study has useful for practical, theoretical and managerial level. This study will increase the current accounting literature in two important ways. First, this study will provide new experimental evidence using MAP. Second, this study will participate in additional studies in a new context of Pakistan as regard what contingency factor effect the use of MAP (Ahmad, 2012).

**Literature review**

Management accounting practices are commonly used in literature review when all of activities done by organization for minimizing their cost, improving efficiency, providing proper information and reducing business resources. Literature shows that most researchers have studied the management accounting practices adoption and implementation on developed and developing countries. The management accounting practices takes an outstanding place in this culture to exchange the modern accounting techniques which are explained briefly by the many contingency factors which include internal and external (Amara and Benelifa, 2017). In organization management accounting plays essential part in the management process. It helps to provide elemental information to the business-like planning, evaluating, controlling and decision making. Manager take information from management accounting and perform activates (Sunarni, 2015).

The effect of immoderate completion in market, economy, less business resources, low business communications among companies, complex business environment and Many technological changes takes companies recognize that the need of management accounting practices to control the cost and decisions which are beneficial for companies (Sleihat et al., 2012). In 1980, a lot of management accounting techniques established like activity based management, balanced scorecard and strategic management accounting. The purpose of these techniques is to support latest technology and latest management accounting practices for instance cost-volume-profit analysis, total quality management, marginal costing and just-in-time production system (Oyerogba, 2015). Financial and non-financial techniques added in current management accounting. The aim of this process is to give information at operational and organizational level. Management accounting objective is to present non-financial and financial data that are needed for managers, owners, investors and employees (Abdullah et al., 2016). Companies have changed their strategy from traditional accounting practices to the recent use of the advanced management accounting
In today’s business world, many companies face various challenges to effectively overcome and maintain competitiveness. Many researchers claim that traditional management accounting is no longer adequate for modern production environments, since the production process has changed as the productivity and destructive productivity of the organization have changed. These changes require relevant and timely information relevant to support management for planning and control purposes because the traditional administration did not provide such information. One area in which organizations can adapt effectively is to monitor the movement of competitors (Abdallah, 2017).

Through management accounting practice MNCs reduce their cost and increase the profit and also achieve the global competition, but in KSA smallest companies use in traditional technologies instead of advance technologies (Sulaiman et al., 2004). The management accounting must be used for management accounting practices that the result must be satisfies the management before taking or implementing any decision (Amara and Benelîa, 2017). The internal or external issues affect the MAP’s changes in organization (Nishimura, 2005). When the mass increase the firm also increase factors influence on the management accounting practices (Davilla and Foster, 2005, 2007).

Theory of contingency

There are many techniques are developed to respond the innovations and technology in business environment and all of these changes in management accounting practices have to face the contests of present business needs (Paaso, 2013). Every organization has its own management accounting system which is affected by internal and external factors which can be changed in technology or infrastructure change. Like a food company wants to change its technology for handling, packaging, processing food then they must be installing the computer-based system which is influenced by the management accounting practices (Alleyne and Weekes-Marshall, 2011). Theory shows that there is no single most ideal approach to control organizations which would generally apply to all organizations consistently and in all conditions (Paaso, 2013). Contingency theory claims that there is no universally satisfactory model of organizations that describe the variety of organized design, that’s why organization design rest on contingency factors suited to the situation. Contingency variables encompassing business policy, external environment, company mass, and kind affect the sketch of management control system. Contingency approach assumes that the plan and the practices of management control system are impact by the framework in which they are applied (Dropulić, 2013). Micro level hence deals with the practical “doing” of management accounting in the daily life of managerial actors (Šiska, 2016).

The basic resolution of this review of literature on contingency theory is to form an idea of how framework affects operations and results in contingent outcomes in organizational performance. Being familiar with the different types of control challenges organizational framework can impose is also important when considering the responses by management to apply control over various actions. This information will be further polished when designing the study and the measurement instrument.

This study talks the research question on whether contingency variables included strategic business, type of company, size and environment affect the design of management control system.

External factors

An organization cannot simply evolve to reflect the objectives, motivations or needs of members or its leadership. You must respect the limits imposed by your relationship with the environment. Therefore, the unpredictable state of the environment has an impact on the accounting management system (Amara and Benelîa, 2017).
Environment uncertainty

Literature shows a contingency relationship between circumstantial variables and Management accounting practices from them many studies explore the effects of circumstantial variables such as environment uncertainty on Management accounting practices. These studies give us an understanding into a “Fit” hypothesis; very rare efforts have been made to connect all variables to performance. In simple words, many literatures claim and showed analytically that if there is high environment uncertainty then it will cause more dependence on Management accounting practices Gul and Chia, 1994. Environmental uncertainty is one of the first conditional factors that examined due to the impact on the development of management accounting practices. When perceived insecurity is low, management can make relatively accurate estimates on the market. Companies with higher environmental safety use more sophisticated methods for management accounting than companies with lower environmental safety. The level of environmental uncertainty affects the level of improvement in management accounting practices (Amara and Benelifa, 2017). The association between the intensity of competition role of benchmarking of the marketing control and management system and a performance from the information provided by the accounting system and the business unit. Being able to compete successfully with market competition in the nature of organizations that use information management system, and improve their result.

Internal factors

The internal factors of the company are related to its competitive strategy, organizational structure, advance manufacturing technology, total quality management and just in time.

Competitive strategy

In the management accounting literature, it was considered that there was a general organization strategy and the relationship between strategic decisions and the design of an organization’s accounting and control system is analyzed. These studies usually measure strategy as a continuum between companies that follow a “back,” “harvest” or “cost leader” strategy and companies that follow a “perspective,” “build” or “innovative” strategy although it is a useful indicator of the organization’s strategy, this simple continuous process lacks the multidimensional nature of other strategic decisions such as the provision of superior quality compared to the competition, the differentiation of products through the brand image (McLellan and Moustafa, 2011). Findings reveal that every unit in an organization often followed different strategies. The literature of management accounting practices commonly takes organizational strategy as an assumed and then shows the relationship between strategic of business choices and an organization’s accounting management control system.

Organizations must change strategies to adapt changes to the environment. However, the institutional approach to organizational change suggests that the organizational structure affects the learning strategy of the organization and the ability to adapt to environmental changes. Using a strategic change in gradual or radical adaptation may lead to a successful change in the structural arrangement of the organization. All elements of the organization, such as structure, strategy, system, people, culture, etc., need to be changed at the same time to achieve greater organizational consistency and efficiency (Ghasemi et al., 2016).

Organization structure

Literature shows that in the decentralized business system it is the big responsibility of the managers to control the function and get the information that is not available
to top level managers. Decentralized system companies are be successful if their accounting system is strong. A strong management accounting system helps the manager and provides useful information to managers for decision making (Abdel-Kader and Luther, 2008). The structure has been studied by many authors with the intention of a possible factor explaining the integration of accounting management practices. It is presented in two types of opposing structures in relation to participation in the decision. This corresponds to the central structure and the decentralized structure. The result is a positive relationship between decentralization and the state of development of accounting practices. There is no positive relationship between the practice of concentration and the accounting system (Amara and Benelifa, 2017).

Advance manufacturing technology
To be one of the first conditional variables in connection with management accounting systems, design was a type of production technology. For example, a positive relationship was found between the degree of automation in the production process and how budget systems are used. The traditional performance indicators only have a limited focus, are historical and, in many cases, incomplete. Organizations using AMT need a multi-dimensional performance measurement (financial and non-financial) system to offer managers with continuous signals, which is more significant in their daily operations and where efforts must be focused (Abdul-Kader and Luther, 2008). As the environment changes and the AMT level increases, managers are expected to use management accounts more often and more frequently than they decide. It is expected that greater acceptance of AMT will be related to the wider use of new accounting systems such as ABC and non-financial performance indicators.

Total quality management
Managers and leaders got energy through the fulfilling need of customers which are the main objective of total quality management. Its bring improvement in quality and innovation in an organization. Organizations which are using TQM getting more advantages in term of loyal customers, best quality products, bringing innovations in products (Zehir et al., 2012). However, the effect is significant efforts to investigate the cost of modern management practices the overall management of quality. From the literature, which examines the relationship between the sum quality management and accounting system, increases the auxiliary connecting faith in the non-financial data. Traditional accounting methods that depend on budget discrepancies are inadequate throughout the quality management environment because they do not find the origin of capacity (Gerdin, 2005).

Just in time
In previous accounting system accountant records thousands of journal entries and ledgers which are most difficult for organizations which are producing many products in a day. Through JIT it is reduce many entries which are very help in accounting system (Dalci, 2006). The literature on the use of JIT in small and medium enterprises, especially in developing countries is limited. The introduction of JIT inventory management system requires well-designed and well-established infrastructure such as efficient transportation system, electronic information network and reliable power source (Mazanai, 2012). As above discussion, the contingency factors (internal and external) as independent variable and MAP as dependent variable can be seen in model as below; The below framework shows the impact of internal and external factors on MAP (Figure 1).
**Research hypotheses**

**H1.** “Companies that operate in conditions of high environmental uncertainty integrate management accounting practices.”

**H2.** “Companies with extreme market competition integrate the management accounting practices.”

**H3.** “Companies that adopt the differentiation strategy adopt the most sophisticated management accounting practices.”

**H4.** “Firms with decentralized structures adopt the management accounting practices compared to firms with centralized structure.”

**H5.** “Firms with advanced manufacturing technology (AMT) adopt more sophisticated MAPs.”

**H6.** “Firms with total quality management (TQM) adopt more sophisticated MAPs.”

**H7.** “Firms with a just-in-time (JIT) system adopt more sophisticated MAPs.”

**Research design and methodology**

A research design provides the basic instructions to execute the project. In particular, a research project must provide the relevant information that is most appropriate respond effectively to research questions or assumptions (Ahmad, 2012). The determination of the sample size is influenced by many factors counts at the same time. The factors include cost and time restrictions, the variability of the data in the target population, the required accuracy of evaluation and if the results should be generalized and, if so, with what degree of confidence (Hair et al., 2008). When deciding on the size of the sample, there is often an exchange between cost and time and the large sample size. A larger sample size obviously requires more data collection and analysis.

An exploratory study was carried out based on a questionnaire on a sample of Pakistani companies from the different fields of activity. The main objective of this research is to examine the impact of business sectors on accounting practices. The research questions in this study refer to the use of MAP by Pakistani different sectors. In demand to collect the required data, we will adopt a questionnaire focusing on a sample of Tunisian companies characterized by a differentiation of internal and external factors. The data which are
collected are “quantitative” in nature which represents the numerical measurement of data in numbers. The purpose of this questionnaire is to find that accounting practices are directly related to these factors. The questionnaire was distributed by direct contact in different sectors. In total, 200 questionnaires were distributed and 183 copies were completed and maintained with 91.5 percent (Table I).

Statistical methods are necessary for conducted analysis so in this study “SPSS 21.0” software was used for processing the questionnaire data. The detail of variables and their references are as follow (Table II):

\[
MAP = \alpha + \beta_1 EU + \beta_2 MC + \beta_3 CS + \beta_4 S + \beta_5 AMT + \beta_6 TQM + \beta_7 JIT + e.
\]

Above equation shows MAP as a dependent variable and “\(\alpha\)” is constant with variables, \(\beta_1\) shows environmental uncertainty, \(\beta_2\) shows market competition, \(\beta_3\) shows competitive strategy, \(\beta_4\) shows Structure, \(\beta_5\) shows advance manufacturing Technology, \(\beta_6\) Total quality management, \(\beta_7\) shows just in time and e shows error term.

**Results**

Table III indicates the correlation between all variables and the level of significance is (0.01). The values which are less than 0.5 are listed in weak correlation. “EU and MC,” “EU & CS,” “MC and CS,” “MC and TQ,” “MC and S,” “CS and TQ,” “CS and JIT” and “CS and MAP” having a weak and significant relationship and the direction of relationship is positive among them. The values between 0.5 and 0.6 are listed in medium correlation. “EU and JIT, MC and AMT, MC and JIT, MC and MAP, CS and AMT, S and AMT, S and JIT, S and MAP, AMT and TQ, AMT and MAP, JIT and MAP” having a medium and significant relationship and the direction of relationship is positive among them. The values which are more than 0.6 are listed in high correlation. “EU and S, EU and AMT, EU and TQ, EU and MAP, S and TQ, AMT and JIT” having a high and significant relationship and the direction of relationship is positive among them.

<table>
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<th>Table I. Response rate of the study</th>
<th>Elements</th>
<th>Total distributed questionnaires</th>
<th>Collected questionnaires</th>
<th>Rate of participations (%)</th>
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<th>Measurement</th>
<th>No. of questions</th>
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<td>Dependent</td>
<td>Questionnaire</td>
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<td>Amara and Benelifa (2017), Abdel-Kader and Luther (2008)</td>
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<td>Independent</td>
<td>Questionnaire</td>
<td>9</td>
<td>Amara and Benelifa (2017), Abdel-Kader and Luther (2008)</td>
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<tr>
<td>Market competition</td>
<td>Independent</td>
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<td>6</td>
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<td>Competitive strategy</td>
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<tr>
<td>Total quality management</td>
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<td>Questionnaire</td>
<td>5</td>
<td>Abdul-Kader and Luther (2008)</td>
</tr>
<tr>
<td>Just in time</td>
<td>Independent</td>
<td>Questionnaire</td>
<td>8</td>
<td>Abdul-Kader and Luther (2008)</td>
</tr>
</tbody>
</table>

Table II. Sources of the scale
The relationship between EU and MAP is highly significant. These findings confirm the empirical results of previous studies such as Kader et al. (2008) and Amara and Benelifa (2017) that companies with a higher level of environmental uncertainty use more complex MAPs than companies with a lower level of environmental uncertainty.

The relationship between MC and MAP is insignificant (0.067) and the EU has a significant impact on MAP. These findings confirm the empirical results of previous study of Mia et al. and Amara and Benelifa (2017) which explained that the Kruskall–Wallis test shows that there is no significant difference between the three groups of companies in terms of the intensity of competition in the market. This implies that the level of improvement in management accounting practices is not explained by intensity of market competition.

### Table IV

<table>
<thead>
<tr>
<th>Correlation</th>
<th>EU</th>
<th>MC</th>
<th>CS</th>
<th>S</th>
<th>AMT</th>
<th>TQ</th>
<th>JIT</th>
<th>MAP</th>
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<tr>
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<tr>
<td><em>n</em></td>
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<tr>
<td>Pearson correlation</td>
<td>0.411**</td>
<td>0.210**</td>
<td>1</td>
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<tr>
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<td>0.000</td>
<td>0.004</td>
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<tr>
<td>Pearson correlation</td>
<td>0.771**</td>
<td>0.422**</td>
<td>0.360**</td>
<td>1</td>
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<td><strong>AMT</strong></td>
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<tr>
<td>Pearson correlation</td>
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<td>0.568**</td>
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<tr>
<td>Pearson correlation</td>
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<td>0.422**</td>
<td>0.360**</td>
<td>0.742**</td>
<td>0.559**</td>
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<td><strong>JIT</strong></td>
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<tr>
<td>Pearson correlation</td>
<td>0.588**</td>
<td>0.575**</td>
<td>0.393**</td>
<td>0.575**</td>
<td>0.627**</td>
<td>0.775**</td>
<td>1</td>
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<tr>
<td>Sig. (two tailed)</td>
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<td>0.000</td>
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<td><strong>MAP</strong></td>
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<tr>
<td>Pearson correlation</td>
<td>0.720**</td>
<td>0.597**</td>
<td>0.260**</td>
<td>0.591**</td>
<td>0.576**</td>
<td>0.591**</td>
<td>0.577**</td>
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<tr>
<td>Sig. (two tailed)</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
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<td>184</td>
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</tbody>
</table>

*Note:* **Correlation is significant at the 0.01 level (two tailed)**
The relationship between CS and MAP is highly insignificant 0.085. This results not confirm the previous literature because due to geographically Pakistan is developing country and all previous literature shows results on developed countries but in the future after three to four years results can be significant because Pakistan is moving toward developed economy. The relationship between Structure and MAP is highly significant. These findings confirms the empirical results of previous studies such as Abdul-Kader and Luther (2008) explained that there is a significant relationship between decentralization in organization structure and MAP. Amara and Benelfia (2017) indicate that significant relationship found among structure and MAP and Zainun et al. also show significant relationship between structure and MAP.

The relationship between AMT and MAP is highly significant. These findings confirm the empirical results of previous studies such as Abdul-Kader and Luther (2008), Egbunike et al. (2015) and Ahmad (2012) these all explained that there are positive and significance relationship between advance manufacturing technology and MAP.

The relationship between TQM and MAP is highly significant. These findings confirm the empirical results of previous studies such as Zehie et al. and Abdul-Kader and Luther (2008), which explains that firms are with TQM adopt more MAP and there is significant relationship between TQM and MAP.

The relationship between JIT and MAP is highly significant. These findings confirm the empirical results of previous studies such as Abdul-Kader and Luther (2008), and Dalci (2006) indicates that just in time has significant impact on MAP.

**Conclusion**

In this paper, we examine the impact of internal and external characteristics of companies on the management accounting practices. In particular, we investigate to what extent the characteristics associated with the internal and external environment of a company. The literature conducted is more limited and inside the Pakistan, with our preliminary work, it let us to think that the diversification of the complexity of management accounting is partly explained by contingent variables.

Results investigate that management accounting differences significantly affected by environmental uncertainty, these variables the direction of the significant relationships confirms a prior expectations. On the other hand, our expectations about the significant relationships between the market competition (H2) and competitive strategy (H3) are not supported by the data and these are shown as an insignificant.

This study suggests that there is need of awareness and understanding the use of MAP in small firms in Pakistan so that the small firms can enhance their productivity at low cost and increased their performance.
This study will provide benefit to the managers whom are working in different sectors for maximization of profit. This study represents significant results and the concepts of MAP become popular in Pakistan. Organizations can use the knowledge to implement MAP policies to protect them from losses. The data collected from 200 different companies are too small compared to previous researches. Finally, research in this field can be developed by comparing the situation in Pakistan with the introduction of a MAP to other developing countries, studying differences in cultural factors and other conditional factors.

References


Further reading


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The effect of enterprise risk management (ERM) on firm value in manufacturing companies listed on Indonesian Stock Exchange year 2010-2013

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Department of Accountancy, Universitas Airlangga, Surabaya, Indonesia

Abstract

Purpose – The purpose of this paper is to identify the effect of enterprise risk management (ERM) with firm size, ROA and managerial ownership as control variables on firm value that is proxied by Tobin’s Q.

Design/methodology/approach – Population of this research was manufacturing companies listed on the Indonesian Stock Exchange (IDX) in 2010–2013. The used method in this research is multiple linear regression-ordinary least square and hypotheses testing using t-test to test the regression coefficients with level of significance of 5 percent.

Findings – The results showed that ERM, ROA and size of the company have a significant positive effect on the firm value. While the managerial ownership has a significant negative effect on the firm value.

Originality/value – The results showed that firm value increases as ERM, ROA and size of the company improves. While the managerial ownership has a significant negative effect on the firm value.

Keywords Enterprise risk management, Firm value, Firm size, ROA, Managerial ownership

Introduction

Companies in running their activities are faced with uncertain conditions that can affect the success or failure in achieving goals. The rapid development of the external and internal environments leads to increasingly complex business risks (Sanjaya and Linawati, 2015). To deal with existing circumstances, companies need to provide management tools that can manage risks (Widjaya and Sugiarti, 2013). A good risk management will not only improve business certainty but also increase competitive advantage and firm value.

Risk management is an integral component of corporate strategy and its implementation is done as an action to prevent and mitigate risks to the smallest risk level, in order for the company to survive in competition. Efforts to improve the quality of risk management implementation can be done through integrated risk management, i.e. enterprise risk management (ERM) implementation.

ERM aims to create systems or mechanisms within the organization so that the adverse risks can be anticipated and managed for the purpose of increasing firm value (Hoyt and Liebenberg, 2011). Therefore, one of the goals of ERM is to create firm value.

This research was conducted to determine the effect of ERM on the firm value. Firm value is the description of prosperity conditions of the owners and shareholders. The welfare of the
owners and shareholders is reflected through the company’s stock price. This study uses Tobin’s $Q$ in measuring values based on market perspectives reflecting investors’ future expectations (Lin et al., 2012). Firm values are influenced by ERM as well as influenced by several other variables, i.e. firm size measured through ROA, profitability and managerial ownership that is used as the independent control variable that affects the firm value.

Several previous studies that linked ERM to firm value have been performed and show inconsistent results. Research by Hoyt and Liebenberg (2011) and research conducted by Tahir and Razali (2011) discuss the effect of ERM and firm value. Hoyt and Liebenberg (2011) stated that there is a significant positive influence, while Tahir and Razali (2011) stated that there is no significant positive effect between ERM and firm value.

Based on previous research which indicates the inconsistency of the research results, the effect of ERM on the firm value will be re-examined. This study was conducted for manufacturing companies listed on the Indonesian Stock Exchange (IDX) in 2010–2013. Manufacturing companies are selected because this sector is a group business with size, volume and risk of trading that is large compared with other sectors.

Literature review

**Enterprise risk management (ERM)**

Risk is something that cannot be avoided by organizations. Risk arises because there are uncertain conditions. According to Hanafi (2009), risks can be grouped into two types, i.e. pure risk and speculative risk. To be able to manage the various risks faced by the company, a risk management tool is required. The focus of risk management is to understand the risks and take appropriate action against those risks.

Efforts to improve the quality of risk management implementation can be done through integrated risk management, that is implementation of ERM. According to a holistic approach, ERM identifies and assesses multiple risks, integrates all types of risks, and then coordinates the activities of risk management to all operating units within an organization. This is contrary to the traditional practices, where certain risks are valued separately by each business unit and they decide on their own a way of handling them (Lin et al., 2012). According to COSO, ERM is a process that is influenced by management, board of directors, and other personnel which run in strategy determination and includes an overall organization, designed to identify potential events that influence the organization, manage risks and also provide adequate confidence related to the achievement of organizational goals (Moeller, 2009).

The objective of company risk management is to create added value in every organizational activity continuously (Siahaan, 2009). Conceptually, the ERM consolidation approach can add firm value in several ways. First, by assessing all risks, firms can develop a complete picture of their own risk portfolio. Second, through ERM, companies can prioritize risk factors according to their own risk appetite (Lin et al., 2012). In addition, the implementation of ERM can assist companies in making decisions related to activities that must be done to run business activities with measurable risk (Widjaya and Sugianti, 2013). Therefore, integrated risk management is needed to make a company more prepared to face the risks.

**Firm value**

In general, the main objective of a company is to increase the value of the company through increasing the welfare of its owners and shareholders. Firm value describes how much price that a potential buyer or so-called investor is willing to pay (Prasetyorini, 2013). As the manager of the company, managers are required to act in accordance with the wishes of the owners and shareholders to improve their welfare. Increasing the welfare of owners and shareholders can be reflected through the increase in market share
prices. In this research, firm value is measured using Tobin’s $Q$ ratio. This ratio shows the market estimation of the firm concerning future returns on investment seen by outsiders and investors (Sugiyono, 2010).

**Agency theory**
The principle of agency theory is the relationship of both parties between the principal and the agent. The principal is the owner of the company or the investor, while the agent is the management that manages the company on behalf of the owner (Jehn and Meckling, 1976). Dalton (2007) revealed that agency theory can lead to “managerial mischief” because of the difference in interests between the principal and the agent. This behavior is related to the actions of each party that is motivated by self-interest. This conflict of interest is called an agency problem, which then leads to information asymmetry between investor and management.

**Managerial ownership**
Managerial ownership is the percentage measurement of the shares held by management, such as directors and commissioners or any parties directly involved in corporate decision-making (Indahningrum and Handayani, 2009). The agency approach considers the managerial ownership structure as a tool for reducing conflict within the company. The amount of shares ownership owned by directors and commissioners shows how much effort they have in aligning their interests with shareholders.

**Firm size (Size)**
Firm size describes the size of a firm that can be expressed by total assets or total net sales. The greater the total assets and sales, the greater the size of a firm. The size of the firm is divided into three categories, namely large firms, medium-size and small firms. The determination of the size of the firm is based on the total assets of the company. Thus, the size of the company is the size or amount of assets owned by the firm.

**Profitability**
Profitability is the company’s ability to generate profit in the future and is an indicator of the success of the company’s operations. High profitability will spur the company on to grow and develop and vice versa. The increase in profitability has a positive effect on the company’s financial performance in achieving the goal to maximize the firm value that will be responded to positively by the investor, so that the demand for stock increases and can raise the stock price. Profitability ratios can be reflected with return on assets (ROA). According to Ross (2007), ROA is the ratio of net income to the total assets of the company. ROA is a measure to assess how much rate of return of the company assets.

**Conceptual framework**
Based on a previous literature review and research, it will be tested whether the ERM variable has a positive effect to firm value with control variable, i.e. firm size, ROA and managerial ownership. Relationship model can be illustrated by the following figure (Figure 1).

ERM allows management to effectively handle risk-related uncertainties by integrating all types of risks using integrated tools and techniques communicated to all business lines, thereby increasing the capacity to build firm value. The implementation of ERM in a company is also viewed positively by investors so that it can be taken into consideration in investing. A positive response from an investor can increase the company’s value with increasing demand for stocks:

**H1.** ERM has a positive effect on firm value.
Research methods
This research is conducted by using a quantitative approach that focuses on hypothesis testing. The assumptions used in this research are measurable variables that begin with hypotheses and theories.

Research variable
Dependent variable in this research is firm value, while independent variable is ERM. The research also used control variables, consisting of firm size, ROA and managerial ownership.

Operational definition of variables
(1) Firm value: the value of the firm is the value given by the financial market (market price) that is willing to be paid by the prospective buyer (investor). This study uses the ratio of Tobin’s $Q$ which is calculated by the following formula:

$$Q = \frac{\sum \text{Outstanding shares} \times \text{Closing price}}{\text{Total assets}} + \frac{\text{Total liabilities}}{\text{Total assets}}$$

(2) ERM: ERM disclosures contained in the company’s annual report are conducted by searching for the same phrase as the following words, “ERM,” “Chief Risk Officer,” “Risk Management Committee,” “Risk Committee,” “Strategic Risk Management,” “Consolidated Risk Management,” “Holistic Risk Management,” “Integrated Risk Management,” ERM is measured by dummy variable, value 1 for companies implementing ERM and 0 for others.

(3) Firm size: in this study, the size of the firm is described by the amount of assets owned by the company as measured by total assets or commonly called Ln (Assets).

(4) ROA: ROA is the ratio between net profit to total assets. ROA data are calculated by the formula: Net profit/Total assets.

(5) Managerial ownership: managerial ownership is a measure of the percentage of shares held by management such as, directors and commissioners or any parties directly involved in corporate decision-making. The calculation of managerial ownership is proxied by the percentage of shares owned by management, such as directors and commissioners:

$$\text{Own} = \frac{\sum \text{Shares owned by management}}{\sum \text{Shares outstanding}} \times 100\%.$$
Types and data sources

The type of data used in this study is quantitative data, i.e. the type of nominal data (dummy) and ratio. Sources of data in this study are secondary data that are obtained from data sources of audited financial statements and annual reports of manufacturing companies listed on IDX from the period 2010–2013. The company’s financial and annual reports are obtained from IDX’s website www.idx.com and yahoofinance.

Data collection procedures

The method of data collection in this study is by recording the required data listed in the financial statements and annual reports of companies and yahoofinance. After that, calculations for each variable are performed, then followed by data analysis. It therefore proceeds as documentation, collection, selection, tabulation for quantitative analysis and presented as informative processed data.

Population and sample

The population in this study is a manufacturing company listed on the Indonesian Stock Exchange (IDX) in 2010–2013. Sampling technique in this research is purposive sampling. The sampling criteria in this research are:

1. manufacturing companies listed on IDX 2010–2013;
2. companies that are always listed on the IDX during the research period;
3. companies that publish complete financial reports and annual reports during 2010–2013;
4. companies that provide complete stock price data at the end of the year (closing price) during the period 2010–2013; and
5. the unit of financial reporting currency used is rupiah.

From all manufacturing companies listed in the Indonesian Stock Exchange (IDX) for the period 2010–2013, there were obtained samples from each period as follows (Table I).

Analysis technique

Analytical techniques used to test and prove the hypothesis in this study are multiple regression model (regression multiple), with the help of Statistical Product and Service Solutions 18. The research model for this research can be expressed in the following equation:

\[ Q = \alpha + \beta_1 ERM + \beta_2 KM + \beta_3 SIZE + \beta_4 ROA + \epsilon. \]

### Table I.

| Criteria | Number of sample  
<table>
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</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
</tr>
<tr>
<td>1. Total population of manufacturing companies listed on BEI</td>
<td>125</td>
</tr>
<tr>
<td>2. Companies not listed on the IDX during the study period</td>
<td>(2)</td>
</tr>
<tr>
<td>3. The financial statements and annual reports are incomplete during the period 2010–2013</td>
<td>(0)</td>
</tr>
<tr>
<td>4. Companies that do not provide complete stock price data at the end of the year (closing price) during the period 2010–2013</td>
<td>(1)</td>
</tr>
<tr>
<td>5. Units of currency other than the rupiah during the period 2010–2013</td>
<td>(10)</td>
</tr>
<tr>
<td>Total sample</td>
<td>112</td>
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</tbody>
</table>

Source: Processed data
Explanation: \( Q = \) Firm value measured with Tobin’s \( Q \); \( \alpha = \) Intercept coefficient; \( \beta_{1-4} = \) Coefficient for each independent variable; ERM = Enterprise risk management measured by dummy variable \( 1 = \) implement ERM and \( 0 = \) for others; KM = Managerial ownership; SIZE = Firm size measured from book value assets; ROA = Return on Assets; \( \varepsilon = \) Error.

Stages in multiple regression analysis techniques are descriptive statistics, classical assumption test, normality test, autocorrelation test, multicollinearity test, and Heteroskedasticity test. Hypothesis testing using \( t \)-test with significance level of 0.05 (\( \alpha = 0.05 \)).

Results and discussion

**Subject and object research description**

The subject of this research is the effect of ERM on the firm value in manufacturing companies listed on the IDX for the period 2010–2013. The object of this study is a manufacturing company listed on the IDX in 2010–2013 period contained in www.idx.co.id. Total sample companies according to the criteria are 421 observations.

**Descriptive statistical analysis**

Descriptive statistical analysis in this study aims to describe the variables used, i.e. ERM, Firm Size (size), ROA, Managerial Ownership and Tobin’s \( Q \). Based on the research results, the minimum, maximum and average value of each variable of the sampled company during 2010–2013 can be seen (Table II).

**Firm value**

The firm value is indicated by the LnTobins\( Q \) index. Based on the results of descriptive statistical analysis during the period 2010–2013, LnTobins\( Q \) index reached a maximum value of 15.54 for PT. Unilever Indonesia Tbk in 2013 and the lowest value of 0.22 for Polychem Indonesia Tbk in 2010. LnTobins\( Q \)’s value of more than 1 indicates a company growth based on the market value of the company’s stock.

**Enterprise risk management**

ERM is measured by a dummy variable; if the company implements ERM the value is one, and zero if the company does not implement ERM. The analysis shows that there are 10.7 percent of the 112 firms in 2010, 14.4 percent of the 111 companies in 2011, 15 percent of the 100 companies in 2012 and 19.4 percent of the 98 companies in 2013 that implement ERM.

**Firm size**

The highest value of 33.00 for PT. Astra International Tbk in 2013 and the lowest value of 23.08 for PT. Alam Karya Unggul Tbk in 2012. The size of the company in the sample company has an average of 27.8116.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnTobins( Q )</td>
<td>421</td>
<td>0.22</td>
<td>15.54</td>
<td>1.8534</td>
<td>2.1252</td>
</tr>
<tr>
<td>ERM</td>
<td>421</td>
<td>0.00</td>
<td>1.00</td>
<td>0.1473</td>
<td>0.35479</td>
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<tr>
<td>Size</td>
<td>421</td>
<td>23.08</td>
<td>33.00</td>
<td>27.8116</td>
<td>1.58228</td>
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<tr>
<td>ROA</td>
<td>421</td>
<td>−0.76</td>
<td>0.97</td>
<td>0.0690</td>
<td>0.13549</td>
</tr>
<tr>
<td>KM</td>
<td>421</td>
<td>0.00</td>
<td>0.70</td>
<td>0.0264</td>
<td>0.07159</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>421</td>
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</table>

Table II. Descriptive test results
Profitability

Profitability of the company is proxied by ROA. Based on the results of descriptive statistical analysis, the highest value of 0.97 for PT. Gudang Garam Tbk in 2012 and the lowest value of −0.76 for PT. Alam Karya Unggul Tbk in 2011 were obtained. The average value of the sample company’s ROA is 0.0690 which reflects the company’s effectiveness in generating profit by utilizing its assets at 6.90 percent.

Managerial ownership

Most of the sample companies showed a relatively small proportion of internal ownership compared to external ownership with an average ownership value of 0.0264. The highest ratio is 0.7 which is that owned by PT. Sat Nusa Persada Tbk, while the lowest ratio of 0.00 is owned by several companies such as PT. Unilever Indonesia Tbk, PT. Cement Indonesia (Persero) Tbk and others.

Regression model analysis

Regression analysis is used to test the effect of independent variables on dependent variable. This study uses multiple regression analysis to determine the effect of ERM, size, profitability (ROA) and managerial ownership on firm value. The following is the result of the regression.

Based on the calculation of regression Table III, can be formulated the regression equation as follows:

\[
Tobin's \, Q = -1.783 + 0.348 \, ERM_{it} + 0.071 \, Size_{it} + 1.587 \, ROA_{it} - 1.768 \, KM_{it} + \epsilon.
\]

The positive coefficient indicates the change between the independent variables and dependent variable is in the same direction, whereas the negative coefficient indicates the change between the independent variables is in the opposite direction. Here is the interpretation of the regression coefficient value above.

Constants

If ERM, size, ROA, and managerial ownership do not give effect then the firm value will be −1.783.

Enterprise risk management (ERM)

ERM variable coefficient of 0.348 means that if the ERM has increased by one unit then the value of the company will increase by 0.348 and vice versa. The sign of a positive regression coefficient signifies a direct relationship.

<table>
<thead>
<tr>
<th>Unstandardized Coefficients</th>
<th>Standardized coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>B</td>
</tr>
<tr>
<td>(Constant)</td>
<td>−1.783</td>
</tr>
<tr>
<td>ERM</td>
<td>0.348</td>
</tr>
<tr>
<td>Size</td>
<td>0.071</td>
</tr>
<tr>
<td>ROA</td>
<td>1.587</td>
</tr>
<tr>
<td>KM</td>
<td>−1.768</td>
</tr>
</tbody>
</table>

Table III. Regression coefficient results coefficients

Notes: *Dependent variable: LnTobinsQ. *Significant at 5 percent.
**Firm size**
Size variable coefficient of 0.071 means that if the size increased one unit then the value of the company will increase by 0.071 and vice versa. The sign of a positive regression coefficient signifies a direct relationship.

**Return on assets**
The ROA variable coefficient of 1.587 means that if ROA is increased one unit then the value of the company will increase by 1.587 and vice versa. The sign of a positive regression coefficient signifies a direct relationship.

**Managerial ownership**
The coefficient of managerial ownership variable is $-1.768$. This negative number means if the managerial ownership increases by one unit then the value of the company will decrease by $-1.768$ and vice versa.

**Determination coefficient and correlation coefficient**
From the regression test results, the coefficient of correlation and determination can be seen as follows: Dari hasil uji regresi juga dapat diketahui koefisien korelasi dan determinasi sebagai berikut.

From Table IV can be seen that the value of $R^2$ or coefficient of determination is equal to 0.530. This means that the change of firm value variable ($Y$) caused by ERM, size, profitability (ROA), and managerial ownership is 0.530 or 53 percent while the rest of 0.470 or 47 percent is influenced by other variables outside independent variables and controls used in the study.

**Hypothesis test**
From the results of the classical assumption test, the results obtained stated that the data have been distributed normally, no autocorrelation, no multicolinearity, and no symptoms of heteroscedasticity. Hypothesis testing is done to know the significance of the effect of independent variables to the dependent variable. Here is the $t$-test result.

Based on Table V, the effect of each independent variable can be explained as follows:

1. ERM variable to the firm value is 3.838 with a significance level of 0.000. The significant level of this variable is less than 5 percent so it can be concluded that ERM has a significant positive effect on firm value.
2. Variable control of firm size to firm value is equal to 3.285 with significance value of 0.001 so it concludes that firm size has a significant positive effect on firm value.
3. Variable control of profitability (ROA) to firm value is equal to 6.868 with significance value of 0.000 so it concludes that profitability (ROA) has a significant positive effect on firm value.
4. Variable control of Managerial ownership to firm value is equal to $-4.197$ with a significance value of 0.000 so it is concludes that managerial ownership has a significant negative effect on firm value.

<table>
<thead>
<tr>
<th>Model</th>
<th>$R$</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>Atd. error of the estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.530a</td>
<td>0.280</td>
<td>0.274</td>
<td>0.60226</td>
</tr>
</tbody>
</table>

Notes: aPredictors: (Constant), KM, ERM, ROA, Size; bDependent Variable: LnTobinsQ

Table IV. Determination and correlation coefficient result
Discussion

The effect of ERM to firm value

The results of this study are consistent with the research of Hoyt and Liebenberg (2011) in the United States and Bertinetti et al. (2013) in Europe. However, the results are inconsistent with the results of research conducted by Tahir and Razali (2011) in Malaysia and Li and Chipulu (2014) in China. The results showed that the implementation of ERM is one of the company’s mechanisms that can affect the value of the company.

ERM supports the creation of firm value by facilitating management to face all types of risks caused by uncertainty by integrating all types of risks using integrated tools and techniques, so that all types of risks including failure risk can be managed and minimized. The existence of a better risk management with the implementation of ERM in a company also determines the level of investor confidence. Implementation of ERM that can reduce the risk of a company’s failure is viewed as a positive thing and considered to have good prospects by investors so that it can be taken into consideration in making investment decisions. The consideration is due to the existence of ERM, because companies are able to minimize and manage the risks, including the risk of failure so that investors will tend to be more confident to make an investment. A positive response from investors will increase the demand for shares that will be followed by an increase in corporate value.

ERM aims to create mechanisms within the organization so that adverse risks can be anticipated and managed for the purpose of increasing the firm value. Implementation of ERM can assist companies in making decisions related to activities that must be done to run business activity. Accuracy in decision-making is necessary so that failure in decision-making does not occur, because failure in decision-making can reduce the firm value. Hoyt and Liebenberg (2011) argue that by integrating decision-making across all classes of risk, firms can avoid duplication of risk management expenditures. Pagach and Warr (2010) also argue that ERM can create value if it can help companies avoid cost-related financial distress, so that companies can achieve high profitability and the goal of creating corporate value can be achieved.

The effect of firm size to firm value

The result of this research is consistent with research conducted by Nuraina (2012) and Sujoko and Soebiantoro (2007), which stated that firm size has a significant positive effect on firm value. These results indicate that the larger the size of the firm, the greater the increase in the value of the firm. This is because the larger the size of the company, the more able the company is to control the market conditions and face economic competition that can reduce the uncertainty of the company, and it also determines the level of investor confidence. Firms that have larger sizes will have more flexibility and accessibility to obtain funds from the capital market than smaller companies. The ease is seen by investors as a positive signal because the company is considered to have good prospects (Gusaptono, 2012). Thus the investors will use information about the size of the company in conducting investment valuations that can ultimately increase the value for the company.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized coefficients</th>
<th>Standardized coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>(Constant)</td>
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<tr>
<td>ERM</td>
<td>0.348</td>
<td>0.091</td>
</tr>
<tr>
<td>Size</td>
<td>0.071</td>
<td>0.022</td>
</tr>
<tr>
<td>ROA</td>
<td>1.587</td>
<td>0.231</td>
</tr>
<tr>
<td>KM</td>
<td>-1.768</td>
<td>0.421</td>
</tr>
</tbody>
</table>

Table V.

Notes: *Dependent Variable: LnTobinsQ. *Significant at 5 percent
The effect of profitability (ROA) to firm value
The results of this study support previous research conducted by Murhadi (2008) and Sujoko and Soebiantoro (2007) who found a significant positive effect between profitability (ROA) with firm value. The high level of corporate profitability makes the company’s financial performance look good, so investors will see that the prospects of the company will also be better. Information on the high level of profitability is a signal for investors and can be used as consideration in making investment decisions. A positive response from investors will increase the demand for shares that will be followed by an increase in corporate value.

The effect of managerial ownership to firm value
The results of this study are not in accordance with research conducted by Sujoko and Soebiantoro (2007) but in accordance with Antari and Dana (2013) and Hamin which stated that managerial ownership has a negative and significant effect on firm value. Managerial ownership has a negative and significant coefficient which means high managerial ownership will decrease company value. This is supported by the entrenchment hypothesis proposed by Stulz, suggesting that higher managerial ownership will lead to a decrease in corporate value. Managers who have a large number of shares will tend to secure (entrench) on their positions resulting in a negative relationship between managerial ownership and firm value. As a result, the decision is non-value maximizing so that the value of the company decreases (Chen et al., 2003).

Most of the company’s ownership in Indonesia is concentrated ownership where most of the shares are owned by a small number of individuals or groups. In PT. Sat Nusa Persada Tbk total shares owned by managerial is 0.7. In concentrated ownership, managers are strongly controlled by controlling shareholders so managers make decisions in the interests of controlling shareholders. A conflict of interest will arise if the controlling shareholder has a special interest in the company to maximize his/her own well-being. This leads to a shift in agency conflict into a conflict of interest between the controlling shareholder (together with the management) and the non-controlling shareholder that can lead to the problem of entrenchment that affects the value of the company.

Conclusion
Based on the data analysis and discussion in the previous chapter, the conclusion of this research is that although the implementation of ERM in Indonesia is still small, it can prove that ERM has a positive effect on firm value. This does not rule out the possibility that other companies will follow the ERM implementation in managing their corporate risk. Corporate control size variable (size) has a positive effect on firm value. The profitability control variable (ROA) has a positive effect on firm value. Managerial ownership control variable negatively affects firm value.

The limitation in this research is that the implementation of ERM in Indonesian companies is still not yet comprehensive, especially for non-financial companies. Therefore in this study, ERM measurement does not use Enterprise Risk Management Index because the number of samples implementing ERM is still limited.

References


Sugiyono (2010), Metode penelitian kuantitatif kualitatif dan R&D, Alfabeta, Bandung.


Further reading


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The effect of ERM on firm value

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Evaluating factors of profitability for Indian banking sector: a panel regression

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Rajni Gupta
Delhi University, Delhi, India

Abstract

Purpose – The purpose of this paper is to quantify several measures to examine the determinants of profitability for the listed Indian banks. The authors include both public sector (PSUs) and private sector banks in the study. The authors have taken all the banks that are registered on the Bombay stock exchange (BSE) in the sample. This paper also intends to identify the association between the net profit margin (PM) and return on assets (ROA) with the several other independent variables of the Indian banking sector including private banks and public banks over the past six years starting from April 1, 2012 to March 31, 2017. Therefore, a sample of 39 listed banking companies and total 195 balanced observations are selected for the analysis purpose.

Design/methodology/approach – The authors have used profitability as a dependent variable represented by net PM, ROA and several financial ratios as independent variables. Financial statement and income statement of all listed banks were obtained from BSE and particular company’s website. Panel data regression has been analyzed with both the descriptive research techniques, i.e., fixed effects and random effects. The authors also verified both panel techniques with Hausman’s specification test, which is a widely used procedure for selecting a panel effect. The authors applied PP–Fisher $\chi^2$, PP–Choi Z-statistics and Hadri to testing whether the data set is free from unit root problem and data set is a stationary series.

Findings – Results imply that interest expended interest earned (IEIE) and credit deposit ratio (CRDR) reduced the profitability of private banks in India. IEIE, CRDR and quick ratio (QR) reduced the profitability of public banks in India, while cash deposit ratio (CDR) and Advances to Loan Funds (ALF) increased the effectiveness of public banks. Under the total banks IEIE, CRDR reduced the profitability, on the other side, CDR, ALF and Total Debt to Owners Fund (TDOF) increased the profitability of total banks in India. Under the dependency of ROA, CRDR and TDOF reduced the return of private banks in India, while CDR, ALF and QR enhanced the profitability of private banks.

Originality/value – No variables found significant under public banks while taking ROA as a dependent variable. Under the overall banking data, CRDR reduced the profitability. On the other side, capital adequacy ratio and ALF increased the profitability of total banks in India. The findings of this study will support policy creators, financial executives and investors in constructing investment decisions.

Keywords Profitability, Assets turnover, Fixed effects panel, PSUs banks, Profit margin, Random effect panel

Paper type Research paper

Introduction

Indian banking sector is one part of the shifting business paradigms across the globe. The sector is passing through from an era of high competition, regulatory changes and the slow growth of the Indian economy, which has affected it. The recent few events have affected the

JEL Classification — G21, C4, G28, L19

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banking-related operations, i.e. NPAs, demonetization, digit India, payment wallet, goods & service tax and payment banks in India. The RBI has extended the timeline for Basel III compliance and licenses to private sector entities. So, competition is going to intensify. Increasing competition is going to be a problem as well as an opportunity also to explore new area and scope of banking services. Customer satisfaction, service innovation and technology-driven banking would be the focus points. Economic solidity remains engrained though, with inflation continuing moderate, and the fiscal deficit on the path of consolidation.

In this reading, we want to discover the factors of profitability for private and public sector banks and would like to elaborate, which factors are affecting profit margin (PM), interest income, deposits and certain expenses. Financial performance is the key indicator for any business organization. The future evolution and present operations of corporate would be influenced by profitability. The profitability is the ratio which supports to quantify the financial performance of business uniqueness of this study, which divides whole banking data into three categories, i.e. private bank, public bank and combined (private and public). Amandeep (1983) studied several variables that affect the profitability with the help of regression analysis. The author had tried to define various factors that affect the dependent variable, i.e. profitability, also used trend analysis and ratio analysis for commercial banks in India. Mishra (1992) studied and evaluated the profitability of scheduled commercial banks considering the interest and non-interest income and interest expenditure, manpower expenses and other expenses. He said that the growing preemption of funds in the form of liquidity ratio, cash reserve ratio, as compared to the income, advances and total investment than interest income has contributed to the deteriorating profitability of Indian commercial banks. Ramamoorthy (1998) studied profitability and productivity for the Indian banking sector during the period of 1993–1996. The author evaluated and tested profitability as well as the efficiency of Indian banks with its global equals. The results disclosed that Indian banks have higher interest spread than banks abroad, higher operating cost banks in foreign countries and higher risk provision levels. Vennet (2002) described the cost and profit efficiency of European financial conglomerates and universal banks. The author concluded that operational efficiency has become the major determinant of bank profitability. Goddard et al. (2004a,b) revealed that the relationship between the capital-assets ratio and profitability is positive. Satish et al. (2005) scrutinized the performance of 55 banks for the period 2004–2005. They concluded that the Indian banking system gazes rigorous and upcoming advances technology which will assist the banking system to propagate in the coming era. Bhayani (2006) tried to analyze the performance of new private banks through the help of the CAMEL model. The author found the satisfactory performance of these private banks in the Indian scenario.

Vyas and Dhade's (2007) study was primarily focused on the State Bank of India (SBI), as to how much it had been affected by the entry of new private sector banks. The authors used several financial ratios and applied the t-test to evaluate the changes in the business of SBI, especially before and after the entry of private sector banks. Singla (2008) had tried to analyze the role of financial management in the growth of banking. The study was related to measuring the profitability of selected 16 banks for a period from 2000–2001 to 2006–2007. The study concluded that the profitability position was reasonable when likened with the preceding years. Rao (2008) pointed few observations during their research and found that following factors, such as competition, new information technologies and falling costs, have all frolicked a major role for public sector banks in India. The author had taken public, private and foreign banks working in India for a period from 2005–2006 to 2010–2011. Pat (2009) illustrated the various groups of banks and some financial ratio like net profit, return on assets (ROA) and return on equity. The author reported the improvements in net profits margin, ROA and return on equity.
Prasad and Chari (2011) described the financial performance of four major banks in India. The following variables had been taken for the study, spread ratios, burden ratios and profitability ratios. The study brings out the comparative efficiency of SBI, PNB, ICICI and HDFC. Devanadhen (2013) discussed about the financial soundness of the Indian banking sector. He had included 14 public and 3 private banks from April 1, 2000 to March 31, 2011 in their study. Central Bank of India erected last in the total performance and SBI exhibited better performance than ICICI Bank. Barua et al. (2017) found a negative link between profitability and market concentration. Other findings suggested that capitalization, credit risk, leverage and ownership structure are the most important elements of the viability of Indian banks. Ozili (2017) investigated the determinants of African bank profitability. Using static and dynamic panel estimation techniques, the conclusions specify that bank size, total regulatory capital and loan loss provisions are substantial elements of the ROA of listed banks compared to non-listed banks.

Research problem and objectives

- to examine the determinants of profitability for the banking companies listed on Bombay stock exchange (BSE) by taking PM and ROA as a dependent variable;
- identify various financial ratios, affecting the measurements of profitability;
- apply Hausman’s test to measure panel regression;
- to quantify various determinates for the profitability of listed public banks (PSUs) and private banks; and
- compare the determinants of profitability between public banks and private banks and identify those elements that are moving the productivity of listed banks in India.

Research methodology

This research paper’s purpose is to quantify the determinants of PM of the Indian banking sector that is listed on the BSE for the period of April 2012 to March 2017. As a research procedure, we have obtained the income and the financial statements for the five periods (April 2012–March 2017) of the listed banking companies from BSE and the company’s website. Financial analysis for Indian companies is based on the data of the financial year ending on March 31. Financial ratios were collected from the company’s financial statements, then brief to arise with profitability and other activity ratios that were used in the analysis phase. Therefore, a sample of 39 listed banking companies was selected. Current study excludes eight companies as they do not have audited income statement and financial statement. Finally, only 41 listed oil companies have been included in our study for analysis purpose. Dougherty (2007) recommended a regression model in panel data approaches, i.e. fixed effects (FE) and random effects (RE) panel. After applying both panel data approaches authors must run Hausman’s specification test, if this test provides a significant result, then they should reject the following null hypothesis, “difference in coefficients not systematic” (Table I).

The FE model

The FE model is a specific set of N firms, i.e. private and public listed banks on BSE, and our inference is limited to the behavior of these groups of companies. Inference is conditional on the particular N firms, companies that are observed.
FE regression equation Model A:

\[
\log PM_{it} = \beta_0 + \beta_1 \log TICE_{it} + \beta_2 \log IITF_{it} + \beta_3 \log CAR_{it} + \beta_4 \log ALF_{it} + \beta_5 \log CRDR_{it} + \beta_6 \log CDR_{it} + \beta_7 \log TDOF_{it} + \beta_8 \log QR_{it} + \beta_9 \log IEIE_{it} + u_{it},
\]

FE regression equation Model B:

\[
\log ROA_{it} = \beta_0 + \beta_1 \log TICE_{it} + \beta_2 \log IITF_{it} + \beta_3 \log CAR_{it} + \beta_4 \log ALF_{it} + \beta_5 \log CRDR_{it} + \beta_6 \log CDR_{it} + \beta_7 \log TDOF_{it} + \beta_8 \log QR_{it} + \beta_9 \log IEIE_{it} + u_{it},
\]

where \( \beta_0 \) is the intercept of company \( i \); \( PM_{it} \) the profitability of each company \( i \) at time \( t \) (dependent variable in Model A); \( ROA_{it} \) the return on assets of each company \( i \) at time \( t \) (dependent variable in Model B); \( TICE_{it} \) the total income/capital employed of each company \( i \) at time \( t \); \( IITF_{it} \) the interest income to total funds ratio of each company \( i \) at time \( t \); \( CAR_{it} \) the capital adequacy ratio of each company \( i \) at time \( t \); \( ALF_{it} \) the advances to loans funds of each company \( i \) at time \( t \); \( CRDR_{it} \) the credit deposit ratio of each company \( i \) at time \( t \); \( CDR_{it} \) the cash deposit ratio of each company \( i \) at time \( t \); \( TDOF_{it} \) the total debt to owners fund of each company \( i \) at time \( t \); \( QR_{it} \) the quick ratio of each company \( i \) at time \( t \); \( IEIE_{it} \) the interest expended to interest earned of each company \( i \) at time \( t \); and \( u_{it} \) the error term of company \( i \) at time \( t \) or between company’s error.

The RE models

There are unique, time constant attributes of individuals that are the results of random variation and do not correlate with the individual regressors. We have included private and public listed banks on BSE.

RE regression equation Model A:

\[
\log PM_{it} = \beta_0 + \beta_1 \log TICE_{it} + \beta_2 \log IITF_{it} + \beta_3 \log CAR_{it} + \beta_4 \log ALF_{it} + \beta_5 \log CRDR_{it} + \beta_6 \log CDR_{it} + \beta_7 \log TDOF_{it} + \beta_8 \log QR_{it} + \beta_9 \log IEIE_{it} + u_{it} + \epsilon_{it},
\]
RE regression equation Model B:
\[
\text{LOGROA}_{it} = \beta_0 + \beta_1 \text{LOGTICE}_{it} + \beta_2 \text{LOGITF}_{it} + \beta_3 \text{LOGCAR}_{it} + \beta_4 \text{LOGALF}_{it} + \beta_5 \text{LOGCRDR}_{it} + \beta_6 \text{LOGCDR}_{it} + \beta_7 \text{LOGTDOF}_{it} + \beta_8 \text{LOGQR}_{it} + \beta_9 \text{LOGIEIE}_{it} + u_{it} + e_{it},
\]
where \( \beta_0 \) is the \( y \)-intercept of company \( i \); \( P_{M_{it}} \) the profitability of each company \( i \) at time \( t \) (dependent variable in Model A); \( \text{LOGROA}_{it} \) the return on assets of each company \( i \) at time \( t \) (dependent variable in Model B); \( \text{LOGTICE}_{it} \) the total income/capital employed of each company \( i \) at time \( t \); \( \text{LOGITF}_{it} \) the interest income to total funds ratio of each company \( i \) at time \( t \); \( \text{LOGCAR}_{it} \) the capital adequacy ratio of each company \( i \) at time \( t \); \( \text{LOGALF}_{it} \) the advances to loan funds ratio of each company \( i \) at time \( t \); \( \text{LOGCRDR}_{it} \) the credit deposit ratio of each company \( i \) at time \( t \); \( \text{LOGCDR}_{it} \) the cash deposit ratio of each company \( i \) at time \( t \); \( \text{LOGTDOF}_{it} \) the total debt to owners fund of each company \( i \) at time \( t \); \( \text{LOGQR}_{it} \) the quick ratio of each company \( i \) at time \( t \); \( \text{LOGIEIE}_{it} \) the interest expended to interest earned of each company \( i \) at time \( t \); \( u_{it} \) the error term of company \( i \) at time \( t \) or between company’s error; and \( e_{it} \) the within company’s error.

The Hausman’s test

The Hausman’s (1978) test compares the RE and FE estimators, since the key consideration in choosing between an RE and FE approaches is whether \( c_i \) and \( x_{it} \) are correlated, it is important to have a method for testing this assumption (Tables II and III).

Empirical results

Tables IV and V.

Panel unit root test

Table VI.

The value of fisher \( \chi^2 \) test (PP) statistic is 59.91 and Choi \( Z \)-stat. is 5.88. All of the results indicate the non-presence of a unit root, as both Fisher and Choi \( Z \)-tests do not fail to reject the null of a unit root. We can say that unit root problem does not exist into the Indian banking panel data.

Hadri panel unit root test

The Hadri panel unit root test has a null hypothesis of no unit root in any of the series in the panel. The test is based on the residuals from the individual OLS regressions of on a constant, or on a constant and a trend:

\[
y_{it} = d_i + h_{it} + e_{it}.
\]

Table VII.

The Hadri \( Z \)-statistic value is 10.67 and Heteroscedastic consistent \( Z \)-stat. is 10.54. At the preceding, all of the results indicate the presence of a stationarity, as the Hadri tests do not reject the null of a stationarity. We conclude that the Indian banking panel data are stationarity data set.

<table>
<thead>
<tr>
<th>Table II. The Hadri Z-statistic matrix</th>
<th>( H_0 ) is true</th>
<th>( H1 ) is true</th>
</tr>
</thead>
<tbody>
<tr>
<td>( b_1 ) (RE estimator)</td>
<td>Constant effective</td>
<td>Unreliable</td>
</tr>
<tr>
<td>( b_0 ) (FE estimator)</td>
<td>Constant ineffect</td>
<td>Reliable</td>
</tr>
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<td>S. No.</td>
<td>Security code</td>
<td>Security ID</td>
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<td>---------------</td>
<td>-------------</td>
</tr>
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<td>1</td>
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<td>PNB</td>
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<td>532187</td>
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<td>532209</td>
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<tr>
<td>38</td>
<td>343690</td>
<td>LAKSHVILAS</td>
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<tr>
<td>39</td>
<td>532648</td>
<td>YESBANK</td>
</tr>
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</table>

*Income statement and financial statement of the following companies are not available*

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<th>S. No.</th>
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<th>Security ID</th>
<th>Security name</th>
<th>Type</th>
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<td>STAN</td>
<td>Standard Chartered PLC</td>
<td>Private</td>
<td>INE928L01018</td>
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</table>

*Notes:* This table characterizes all banks listed on Bombay stock exchange (BSE) India from April 2012, out of the total samples 39 companies have been listed on the basis of their security code, security ID, name, type and ISIN number. Income statement and financial statement have been taken from BSE of all respective companies from April 2012 to March 2017. Total 42 companies had been listed under the banking sector (given in the table) on BSE but the unavailability of the income statement and financial statement of three companies included into study.

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**Table III.**

Evaluating factors of profitability
Cross-section regression results
Results and findings
Table VIII signifies the results of FE and RE panel regression for the private banking sector in India. Net profit margin (LOGPM) has been used as a dependent variable, whereas IITF, interest expended interest earned (IEIE), credit deposit ratio (CRDR), CDR, CAR, advances to loans funds (ALF), quick ratio (QR), total debt to owners fund (TDOF) and total income to capital employed (TICE) have been used as an independent variable. The total number of observations under this panel is 195, and 39 is included as a cross-section. Five years of data from 2012 to 2017 have been booked in this study.

Out of all variables, IEIE and CRDR are found significant with the probability value of 0.069 and 0.02, respectively, under the FE regression model for the private banks in India. There is a negative statistically significant relationship between IEIE and CRDR and the viability of the Indian banking sector. Although other independent variables, i.e., IITF ratio, cash deposit ratio (CDR), capital adequacy ratio (CAR), advances to loans funds (ALF) and quick ratio (QR), total debt to owners fund and total income to capital employed have been found insignificant with the net PM, these variables did not influence the profitability of the banking sector in India. The $R^2$ of this FE panel model is 81.00 percent, while adjusted $R^2$ of this panel is 77.00 percent. The $R^2$ explains 81.00 percent variations in the profitability in this panel from 2012 to 2017. Adjusted $R^2$ of this panel explains the 77.00 percent variations in the profitability. Model is acceptable as $F$-test is 23.27. The value of Durbin–Watson stat. is 2.09, which explains there is no autocorrelation problem exists in this FE panel model, and this model is also permitted from hetroscadisticity.

Table VIII

<table>
<thead>
<tr>
<th>TICE</th>
<th>TDOF</th>
<th>ROA</th>
<th>NPM</th>
<th>IITF</th>
<th>IEIE</th>
<th>CRDR</th>
<th>CDR</th>
<th>CAR</th>
<th>ALF</th>
<th>QR</th>
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<tbody>
<tr>
<td>Mean</td>
<td>9.95</td>
<td>15.51</td>
<td>319.15</td>
<td>7.51</td>
<td>8.96</td>
<td>70.28</td>
<td>75.69</td>
<td>5.52</td>
<td>12.74</td>
<td>73.14</td>
</tr>
<tr>
<td>Median</td>
<td>9.79</td>
<td>15.76</td>
<td>173.38</td>
<td>7.50</td>
<td>8.88</td>
<td>71.43</td>
<td>74.76</td>
<td>5.26</td>
<td>12.40</td>
<td>73.34</td>
</tr>
<tr>
<td>Max.</td>
<td>19.25</td>
<td>29.94</td>
<td>1,584.3</td>
<td>22.76</td>
<td>17.5</td>
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<td>105.0</td>
<td>9.82</td>
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<td>96.23</td>
</tr>
<tr>
<td>Min.</td>
<td>6.89</td>
<td>0.00</td>
<td>19.12</td>
<td>-19.4</td>
<td>6.25</td>
<td>53.79</td>
<td>59.86</td>
<td>3.08</td>
<td>7.51</td>
<td>53.78</td>
</tr>
<tr>
<td>SD</td>
<td>1.20</td>
<td>4.90</td>
<td>317.32</td>
<td>1.96</td>
<td>6.19</td>
<td>7.66</td>
<td>7.66</td>
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<tr>
<td>Skewness</td>
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<td>2.76</td>
<td>-0.54</td>
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<td>1.20</td>
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<tr>
<td>Kurtosis</td>
<td>20.57</td>
<td>3.37</td>
<td>4.76</td>
<td>4.51</td>
<td>24.4</td>
<td>2.70</td>
<td>5.80</td>
<td>5.22</td>
<td>3.54</td>
<td>3.86</td>
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Table IV. Descriptive statistics for listed PSU’s and private banks

<table>
<thead>
<tr>
<th>TICE</th>
<th>TDOF</th>
<th>ROA</th>
<th>NPM</th>
<th>IITF</th>
<th>IEIE</th>
<th>CRDR</th>
<th>CDR</th>
<th>CAR</th>
<th>ALF</th>
<th>QR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>9.95</td>
<td>15.51</td>
<td>319.15</td>
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<td>8.96</td>
<td>70.28</td>
<td>75.69</td>
<td>5.52</td>
<td>12.74</td>
<td>73.14</td>
</tr>
<tr>
<td>Median</td>
<td>9.79</td>
<td>15.76</td>
<td>173.38</td>
<td>7.50</td>
<td>8.88</td>
<td>71.43</td>
<td>74.76</td>
<td>5.26</td>
<td>12.40</td>
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</tr>
<tr>
<td>Max.</td>
<td>19.25</td>
<td>29.94</td>
<td>1,584.3</td>
<td>22.76</td>
<td>17.5</td>
<td>82.24</td>
<td>105.0</td>
<td>9.82</td>
<td>18.8</td>
<td>96.23</td>
</tr>
<tr>
<td>Min.</td>
<td>6.89</td>
<td>0.00</td>
<td>19.12</td>
<td>-19.4</td>
<td>6.25</td>
<td>53.79</td>
<td>59.86</td>
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<tr>
<td>SD</td>
<td>1.20</td>
<td>4.90</td>
<td>317.32</td>
<td>1.96</td>
<td>6.19</td>
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<td>7.66</td>
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<tr>
<td>Skewness</td>
<td>2.51</td>
<td>-0.19</td>
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<td>2.76</td>
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<tr>
<td>Kurtosis</td>
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<td>3.37</td>
<td>4.76</td>
<td>4.51</td>
<td>24.4</td>
<td>2.70</td>
<td>5.80</td>
<td>5.22</td>
<td>3.54</td>
<td>3.86</td>
</tr>
</tbody>
</table>

Notes: This table includes descriptive statistics for listed banks on Bombay stock exchange from April 2012 to March 2017. It contains a number of variables which have been used in this study, i.e., total income to capital employed (TICE), total debt to owners fund (TDOF), return on assets (ROA), net profit margin (NPM), interest income to total funds ratio (IITF), interest expended to interest earned (IEIE), credit deposit ratio (CRDR), cash deposit ratio (CDR), capital adequacy ratio (CAR), advances to loans funds (ALF) and quick ratio (QR). Total 195 numbers of samples have been used to comprise a balanced panel of banking sector from the years 2012–2016. Descriptive statistics have been employed in this study. Mean of net profit margin is 7.51, and the return of assets is 319.15.
### Notes:
This table represents the calculation of Pearson’s correlation coefficient matrix. Before examining the panel data models, it is important to estimate the correlation among variables in order to the presence of multicollinearity. The outcomes authorize that there is no cause of multicollinearity in the models as the values of correlation do not surpass from a cut point (0.7). At the end, we conclude that all the variables, i.e. total income to capital employed (TICE), total debt to owners fund (TDOF), net profit margin, IITF, IEIE, CRDR, CDR, capital adequacy ratio (CAR), advances to loans funds (ALF) and quick ratio (QR) have been taken in this study are free from multicollinearity.
Results and findings

Table X indicates the results of FE and RE panel regression for the public banking sector in India. Net profit margin (LOGPM) has been used as a dependent variable under FE and RE panel, whereas IITF, IEIE, CRDR, CDR, CAR, ALF, QR, total debt to owners fund (TDOF) and total income to capital employed (TICE) have been used as independent variables. The total number of observations under this panel is 195, and 39 included as a cross-section. Five years of data from 2012 to 2017 have been used in this study.

Out of all variables, IEIE, CRDR, CDR, advances to loans funds and QR are found significant with the probability values of 0.01, 0.07, 0.07, 0.00 and 0.08, respectively, under the FE regression model for the public banks in India. We have found a negative statistical association between IEIE, CRDR and QR and the viability of public banks in India. However, there is a positive association between CDR and advances to loan funds with the profitability of public banks in India. Although other independent variables, i.e. IITF ratio, CAR, total debt to owners fund and total income to capital employed, have been found insignificant with the net PM for the public banks, these variables did not influence the profitability of banking sector. The $R^2$ of this FE panel model is 74.00 percent, while adjusted $R^2$ of this panel is 65.00 percent. The $R^2$ explains the 74.00 percent existence of included variables from 2012 to 2017. Adjusted $R^2$ of this panel explains the 65.00 percent variations. Model is acceptable as $F$-stat. in 08.21. The value of Durbin–Watson stat. is 01.71.

<table>
<thead>
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<tr>
<td>PP – fisher $\chi^2$</td>
<td>59.9178</td>
<td>0.9361</td>
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<td>0.1721</td>
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<td>PP – Choi Z-stat.</td>
<td>5.8951</td>
<td>1.0000</td>
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<td>0.7305</td>
<td>0.7675</td>
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</table>

Table VI. Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>LOGPM Statistic</th>
<th>Prob.</th>
<th>LOGROA Statistic</th>
<th>Prob.</th>
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<td>Hadri Z-stat.</td>
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<td>07.33698</td>
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<tr>
<td>Heteroscedastic consistent Z-stat.</td>
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<td>0.0000</td>
<td>10.4470</td>
<td>0.0000</td>
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</table>

Table VII. Panel unit root test by Hadri Z-stat.

Notes: This table calculated these types of panel unit root tests: fisher-type tests using the PP method, and PP – Choi Z-stat. Null hypothesis: unit root (individual unit root process). Newey–West automatic bandwidth selection and Bartlett kernel. Total (balanced) observations: 195, cross-sections included: 39
which explains there is no autocorrelation problem exists in this FE panel model and this model is also permitted from hetroscadisticity.

Under the RE regression model, interest income to total funds ratio, CRDR, CAR, advances to loans funds and total income to capital employed are found significant with the probability values of 0.04, 0.01, 0.00, 0.00 and 0.05, respectively. We found a negative association between IITF ratio and CRDR with the profitability of public banks in India. These ratios reduced the PM of public banks in India. However, we find a positive relationship between CAR, ALF and TICE and the profitability of public sector banks. Although other independent variables, i.e. IEIE, CDR, QR and total debt to owners fund, have found insignificant with the PM of public sector banks by the RE regression model, these variables did not influence the profitability of public banks. The $R^2$ of this RE panel model is 57.00 percent, while adjusted $R^2$ of this panel is 54.00 percent. The $R^2$ explains 57.00 percent variations from 2012 to 2017. Adjusted $R^2$ of this panel is explain 54.00 percent variations in the profitability. However, the model is a good fit as $F$-stat. is 17.44. Conversely, the value of Durbin–Watson stat is 01.75, which explains there is a positive autocorrelation problem exists in this RE panel (Table XI).

As out of the above two models (FE and RE), the $\chi^2$ value of this test 31.01 is significant and substantial at the 1 percent level of importance under FE. For the checking validity of

### Table VIII.

<table>
<thead>
<tr>
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<tr>
<td>LOGCAR</td>
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<td>2.31</td>
<td>4.19</td>
<td>0.001***</td>
</tr>
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<td>LOGALF</td>
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<td>1.86</td>
<td>2.37</td>
<td>0.020***</td>
</tr>
<tr>
<td>LOGQR</td>
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<tr>
<td>LOGTDOF</td>
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<td>0.53</td>
<td>0.591</td>
</tr>
<tr>
<td>LOGTICE</td>
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<td>-1.35</td>
<td>0.181</td>
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<td>1.51</td>
<td>0.138</td>
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### Table IX.

<table>
<thead>
<tr>
<th>Test summary</th>
<th>$\chi^2$ statistic</th>
<th>$\chi^2$ df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
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<td>9</td>
<td>0.00</td>
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</table>
these two models, we run a Hausman’s specification test in order to decide the one appropriate model from two possible options. The FE model explains that variables which include IEIE, CRDR, CDR, ALF and QR are significant with the net PM for the public sector banks in India whereas other independent variables, i.e. IITF ratio, CAR, total debt to owners fund and total income to capital employed, have been found insignificant.

Results and findings

Table XII indicates the results of FE and RE panel regression for the private banking sector in India. LOGROA has been used as a dependent variable under FE and RE, whereas IITF, IEIE, CRDR, CDR, CAR, advances to loans funds (ALF), QR, total debt to owners fund (TDOF) and total income to capital employed (TICE) have been used as an independent variable. The total number of observations under this panel is 195, and 39 included as a cross-section. Five years of data from 2012 to 2017 have been used in this study.

Out of all variables under the FE regression model, QR, CRDR, CDR, advances to loans and total debt to owners fund have found significant with the probability values of 0.09, 0.00, 0.09, 0.06 and 0.09, respectively, for the private banks in India using ROA as a dependent variable. We find a negative significant association between CRDR, and total debt to owners fund and the return of asset’s ratio of private banks in India. These two
ratios have affected the ROA for the private sector banks. Nevertheless, QR, CDR and advances to loan funds found to have a positive association with the return of asset’s ratio of private banks in India. These variables increased the return of private sector banks. Although other independent variables, i.e. IITF, IEIE, CAR and total income to capital employed, have been found insignificant with the ROA for the private banks, these variables did not influence the return of private banking in India. The \( R^2 \) of this FE panel model is 84.00 percent, while adjusted \( R^2 \) of this panel is 74.00 percent. The \( R^2 \) explains 84.00 percent deviations. Adjusted \( R^2 \) of this panel explains 74.00 percent variations. The model is acceptable as \( F \)-stat. in 08.61. The value of Durbin–Watson stat is 01.28, which explains there is a serial autocorrelation problem exists in this FE panel.

Under the RE regression, only CAR has found significant with the probability value of 0.01. We have found a positive association between CAR and the ROA for private banks. These ratios continue the return in India. Though other independent variables, i.e. QR, IITF ratio, IEIE, CRDR, CDR, ALF, total debt to owner’s fund and total income to capital employed, have found insignificant with the ROA for private sector banks by RE regression model, these variables did not influence the return of private sector banks in India. The \( R^2 \) of this RE panel model is 21.00 percent, while adjusted \( R^2 \) of this panel is 09.00 percent. The \( R^2 \) explains 21.00 percent variations in this panel from 2012 to 2017. Adjusted \( R^2 \) of this panel explains 09.00 percent variations. However, the model is not a good fit as \( F \)-test is 01.77. The value of Durbin–Watson stat is 01.24, which explains that there is a positive autocorrelation problem exists in this RE panel (Table XIII).

As out of the above two models (FE and RE), the FE model is significant. The outcome suggests that the most appropriate model is the FE model because the \( \chi^2 \) value of this test 14.40 is significant at the 10 percent level of significance. The FE model with these variables, i.e. QR, CRDR, CDR, ALF and total debt to owners, and IITF ratio, IEIE, CAR and total income to capital employed have been found insignificant with the ROA for the private banks in India.
Results and findings

Table XIV indicates the results of FE and RE panel regression for the public sector banking in India. LOGROA has been employed as a dependent variable under FE and RE panel, IITF, IEIE, CRDR, CDR, CAR, advances to loans funds (ALF), QR, total debt to owners fund (TDOF) and total income to capital employed (TICE) have been used as an independent variable. The total number of observations under this panel is 195, and 39 is included as a cross-section. Five years of data from 2012 to 2017 have been used in this study.

On the view of all variables under the FE regression model, not a single variable has found significant for the public banks using ROA as a dependent variable. Accordingly, all independent variables, i.e. QR, CRDR, CDR, ALF, TDOF, IITF ratio, IEIE, CAR and TICE, have been found insignificant with the ROA for the public sector banks in India. These variables did not influence the return of the public banking sector in India. The $R^2$ of this FE panel model is 89.00 percent, while adjusted $R^2$ of this panel is 84.00 percent. The $R^2$ explains 89.00 percent variations from 2012 to 2017. Adjusted $R^2$ of this panel explains the 84.00 percent variations in profitability. Model is a good fit as $F$-stat. is 21.41. The value of Durbin–Watson stat. is 01.20, which explains there is a serial autocorrelation problem exists in this FE.

Under the RE regression, only CRDR has found significant with the probability value of 0.09. We have found a positive association between CRDR and with the ROA for public banks. These ratios continue the return of public banks in India. Though other independent

<table>
<thead>
<tr>
<th>Table XIV. Public banks with return on assets as a dependent variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test summary</td>
</tr>
<tr>
<td>Cross-section random</td>
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<table>
<thead>
<tr>
<th>Table XIII. Hausman’s test</th>
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<tbody>
<tr>
<td>Fixed effect panel</td>
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<tr>
<td>Variable</td>
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<tr>
<td>C</td>
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<tr>
<td>LOGQR</td>
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<td>LOGIITF</td>
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<td>LOGIEIE</td>
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</tr>
<tr>
<td>LOGTDOF</td>
</tr>
<tr>
<td>LOGTICE</td>
</tr>
</tbody>
</table>

Effects specification

$R^2$ | 0.89 | $R^2$ | 0.14 |
Adjusted $R^2$ | 0.84 | Adjusted $R^2$ | 0.14 |
Durbin–Watson stat. | 1.20 | Durbin–Watson stat. | 0.96 |
$F$-statistic | 21.42 | $F$-statistic | 2.01 |
Prob. ($F$-statistic) | 0.001* | Prob. ($F$-statistic) | 0.04** |

Notes: The fixed effect panel equation LOGROA$_{it}$ = $\beta_0 + \beta_1$LOGTICE$_{it} + \beta_2$LOGIITF$_{it} + \beta_3$LOGCAR$_{it} + \beta_4$LOGALF$_{it} + \beta_5$LOGCRDR$_{it} + \beta_6$LOGCDR$_{it} + \beta_7$LOGTDOF$_{it} + \beta_8$LOGQR$_{it} + \beta_9$LOGIEIE$_{it} + u_i$ and random effect panel equation LOGROA$_{it}$ = $\beta_0 + \beta_1$LOGTICE$_{it} + \beta_2$LOGIITF$_{it} + \beta_3$LOGCAR$_{it} + \beta_4$LOGALF$_{it} + \beta_5$LOGCRDR$_{it} + \beta_6$LOGCDR$_{it} + \beta_7$LOGTDOF$_{it} + \beta_8$LOGQR$_{it} + \beta_9$LOGIEIE$_{it} + u_i + \epsilon_{it}$ have been used in this table for regression analysis purpose. Cross-section random and idiosyncratic random effects have been done under effects specification module. Durbin–Watson test has been used for checking autocorrelation and heteroscedasticity. Anova $F$-test has also been used for testing the good fit of this model. *,**,***Significant at the 1, 5 and 10 percent levels, respectively.
variables, i.e. QR, IITF, IEIE, CAR, CRDR, ALF, TDOF and TICE, have found insignificant with the ROA for public sector banks by RE regression model, these variables did not influence the ROA of public banks in India. The $R^2$ of this RE panel model is 14.00 percent, while adjusted $R^2$ of this panel is 07.00 percent. The $R^2$ explains 14.00 percent variations from 2012 to 2017. Adjusted $R^2$ of this panel explains 07.00 percent variations in the profitability. However, the model is not a good fit as $F$-stat. is 02.01. The value of Durbin–Watson stat is 00.96, which explains there is a positive autocorrelation problem exists in this RE panel (Table XV).

As out of the above two models (FE and RE), none of these two models are significant at the desired level of significance. The outcome suggests that the $\chi^2$ value of this test 11.68 is insignificant at the 1, 58 and 10 percent levels of significance according to the criteria of selecting a model described earlier.

Results and findings

Table XVI indicates the results of FE and RE panel regression for overall banking sectors in India. Net profit margin (LOGPM) has been used as a dependent variable under FE and RE panels, whereas IITF, IEIE, CRDR, CDR, CAR, ALF, QR, TDOF and TICE have been used as independent variables. The total number of observations under this panel is 195, and 39 included as a cross-section. Five years of data from 2012 to 2017 have been used in this study.

<table>
<thead>
<tr>
<th>Test summary</th>
<th>$\chi^2$ statistic</th>
<th>$\chi^2$ df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>11.684047</td>
<td>9</td>
<td>0.134</td>
</tr>
</tbody>
</table>

Table XV. Hausman’s test

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1.71</td>
<td>0.20</td>
<td>0.84</td>
<td>C</td>
<td>−5.86</td>
<td>−1.27</td>
<td>0.21</td>
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<tr>
<td>LOGALF</td>
<td>5.10</td>
<td>5.23</td>
<td>0.00*</td>
<td>LOGALF</td>
<td>4.75</td>
<td>6.57</td>
<td>0.01*</td>
</tr>
<tr>
<td>LOGCAR</td>
<td>0.71</td>
<td>1.25</td>
<td>0.21</td>
<td>LOGCAR</td>
<td>2.63</td>
<td>6.83</td>
<td>0.00*</td>
</tr>
<tr>
<td>LOGCDR</td>
<td>0.76</td>
<td>2.36</td>
<td>0.02**</td>
<td>LOGCDR</td>
<td>0.31</td>
<td>1.35</td>
<td>0.18</td>
</tr>
<tr>
<td>LOGCRDR</td>
<td>−3.01</td>
<td>−2.38</td>
<td>0.02**</td>
<td>LOGCRDR</td>
<td>−2.71</td>
<td>−3.78</td>
<td>0.02**</td>
</tr>
<tr>
<td>LOGIEIE</td>
<td>−4.30</td>
<td>−3.08</td>
<td>0.00*</td>
<td>LOGIEIE</td>
<td>−3.21</td>
<td>−3.18</td>
<td>0.01*</td>
</tr>
<tr>
<td>LOGIITF</td>
<td>4.60</td>
<td>1.52</td>
<td>0.13</td>
<td>LOGIITF</td>
<td>−2.00</td>
<td>−1.16</td>
<td>0.25</td>
</tr>
<tr>
<td>LOGQR</td>
<td>−0.36</td>
<td>−1.31</td>
<td>0.19</td>
<td>LOGQR</td>
<td>−0.03</td>
<td>−0.16</td>
<td>0.87</td>
</tr>
<tr>
<td>LOGTDOF</td>
<td>0.35</td>
<td>1.87</td>
<td>0.06***</td>
<td>LOGTDOF</td>
<td>0.08</td>
<td>0.56</td>
<td>0.57</td>
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<tr>
<td>LOGTICE</td>
<td>−1.49</td>
<td>−0.47</td>
<td>0.64</td>
<td>LOGTICE</td>
<td>2.57</td>
<td>1.42</td>
<td>0.16</td>
</tr>
</tbody>
</table>

Effects specification

<table>
<thead>
<tr>
<th></th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>Durbin–Watson stat.</th>
<th>$F$-statistic</th>
<th>Prob. ($F$-statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed effect panel</td>
<td>0.80</td>
<td>0.57</td>
<td>1.36</td>
<td>27.53</td>
<td>0.00</td>
</tr>
<tr>
<td>Random effect panel</td>
<td>0.74</td>
<td>0.55</td>
<td>1.36</td>
<td>27.53</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Notes: The fixed effect panel equation LOGPMit = β0 + β1LOGTICEit + β2LOGIITFit + β3LOGCARit + β4LOGALFit + β5LOGCRDRit + β6LOGCDRit + β7LOGTDOFit + β8LOGQRit + β9LOGIEIEit + uit, and random effect panel equation LOGPMit = β0 + β1LOGTICEit + β2LOGIITFit + β3LOGCARit + β4LOGALFit + β5LOGCRDRit + β6LOGCDRit + β7LOGTDOFit + β8LOGQRit + β9LOGIEIEit + uit + eit, have been used in this table for the regression analysis purpose. Panel EGLS (cross-section random effects) method has been employed. Cross-section random, and Idiosyncratic random effects have been done under effects specification module. Durbin–Watson test has been used for checking autocorrelation and heteroscedasticity. Anova $F$-test has also been used for testing the good fit of this model. *,**,***Significant at the 1, 5 and 10 percent levels, respectively

Table XVI. Total banks with profit margin as a dependent variable
Out of all variables under the FE regression model, advances to loans funds, CDR, CRDR, interest expended to interest earned and total debt to owners fund are found significant with the probability values of 0.00, 0.02, 0.02, 0.00 and 0.06, respectively, under the FE regression model for total banks in India. We find a negative significant association between the CRDR and interest expended to interest earned with the profitability of all banks in India. However, advances to loan funds, CDR and total debt to owner fund found to be positively associated with the profitability of all banks. Although other independent variables, i.e. CAR, interest income to total funds ratio, QR and total income to capital employed, have been found insignificant with the PM for all the banks in India, these variables did not influence the profitability of all banks in India. The $R^2$ of this FE panel model is 80.00 percent, while adjusted $R^2$ of this panel is 74.00 percent. The $R^2$ explains 80.00 percent variations from 2012 to 2017. Adjusted $R^2$ of this panel explains the 74.00 percent variations in profitability. The model is a good fit as $F$-stat. is 12.75. The value of Durbin–Watson stats is 0.94, which explains there is no autocorrelation problem exists in this FE panel model, and this model is also permitted from heteroscedasticity.

Under the RE regression model, advances to loans funds, CAR, CRDR and interest expended to interest earned are found significant with the probability values of 0.01, 0.00, 0.02 and 0.01, respectively. We found a negative association between the CRDR and interest expended to interest earned with the profitability of all the banks in India. These ratios reduced the PM of banks in India. However, there is a positive significant association between the advances to loans funds and CAR with the effectiveness of all banks in an Indian context. Although other independent variables, i.e., CDR, IITF ratio, QR, TDOF and TICE, have found insignificant with the PM of all the banks by the RE regression model, these variables did not influence the profitability of banks in India. The $R^2$ of this RE panel model is 57.00 percent, while adjusted $R^2$ of this panel is 55.00 percent. The $R^2$ explains 57.00 percent variations from 2012 to 2017. Adjusted $R^2$ of this panel explains the 55.00 percent variations in profitability. However, the model is a good fit as $F$-stat. is 27.53. Conversely, the value of Durbin–Watson stat. is 0.36, which explains that there is a positive autocorrelation problem exists in this RE panel (Table XVII).

As out of the above two models (FE and RE), the FE model is significant at the 1 percent level of significance. The outcome suggests that the FE model is more relevant because the $\chi^2$ value of this test is 41.30. The Hausman’s test recommends that the FE model is suitable for this study. We have found the following important variables which include advances to loans funds, CDR, CRDR, interest expended to interest earned and total debt to owners fund are found significant, and other independent variables, i.e. CAR, interest income to total funds ratio, QR and total income to capital employed, found insignificant with the PM for all the banks in India.

Results and findings

Table XVIII indicates the results of FE and RE panel regression for the overall banking sector in India. LOGROA has been used as a dependent variable under FE and RE panel, whereas interest income to total funds (IITF), interest expended to interest earned (IEIE), CRDR, CDR, CAR, advances to loans funds (ALF), QR, total debt to owners fund (TDOF) and total income to capital employed (TICE) have been used as independent variables. The total number of observations under this panel is 195, and 39 included as a cross-section. Five years of data from 2012 to 2017 have been used in this study.

<table>
<thead>
<tr>
<th>Test summary</th>
<th>$\chi^2$ statistic</th>
<th>$\chi^2$ df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>41.300533</td>
<td>9</td>
<td>0.004</td>
</tr>
</tbody>
</table>

Table XVII. Hausman’s test??
Out of all variables under the FE regression model, advances to loans funds, CAR and CRDR are found significant with the probability values of 0.08, 0.06 and 0.07, respectively, under the FE regression for total banks in India. We have found a negative statistical association between the CRDR and the ROA of all the banks in India. However, advances to loan funds and CDR found to be positively associated with the profitability of all the banks in India. Although other independent variables, i.e. CDR, IEIE, IITF ratio, QR, TDOF and TICE, have been found insignificant with the ROA for all the banks in India, these variables did not influence the profitability of the banking sector in India. The $R^2$ of this FE panel model is 83.00 percent, while adjusted $R^2$ of this panel is 77.00 percent. The $R^2$ explains 83.00 percent variations. Adjusted $R^2$ of this panel explains 77.00 percent variations in the profitability. The model is a good fit as $F$-stat. is 14.78. The value of Durbin–Watson stat. is 0.87, which explains that there is no autocorrelation problem exists in this FE panel model, and this model is also permitted from hetroscadisticity.

Under the RE regression model, all the independent variables have been found insignificant with the ROA of all the banks in India. These variables did not influence the profitability of banks in India. The $R^2$ of this RE panel model is 05.00 percent, while adjusted $R^2$ of this panel is 01.00 percent. The $R^2$ explains 05.00 percent variations from 2012 to 2017. Adjusted $R^2$ of this panel explains the 01.00 percent variations in profitability. However, the model is not a good fit as $F$-stat. is 01.19. Conversely, the value of Durbin–Watson stat is 01.71, which explains there is a positive autocorrelation problem exists in this RE (Table XIX).

### Table XVIII.
All banks with return on assets as a dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$C$</td>
<td>2.00</td>
<td>0.32</td>
<td>0.78</td>
</tr>
<tr>
<td>LOGALF</td>
<td>1.75</td>
<td>1.79</td>
<td>0.08***</td>
</tr>
<tr>
<td>LOGCAR</td>
<td>1.08</td>
<td>1.9</td>
<td>0.06***</td>
</tr>
<tr>
<td>LOGCDR</td>
<td>−0.11</td>
<td>−0.34</td>
<td>0.74</td>
</tr>
<tr>
<td>LOGCRDR</td>
<td>−2.3</td>
<td>−1.82</td>
<td>0.07***</td>
</tr>
<tr>
<td>LOGIEIE</td>
<td>0.37</td>
<td>0.26</td>
<td>0.79</td>
</tr>
<tr>
<td>LOGIITF</td>
<td>1.79</td>
<td>0.59</td>
<td>0.55</td>
</tr>
<tr>
<td>LOGQR</td>
<td>0.3</td>
<td>1.1</td>
<td>0.27</td>
</tr>
<tr>
<td>LOGTDOF</td>
<td>0.14</td>
<td>0.77</td>
<td>0.45</td>
</tr>
<tr>
<td>LOGTICE</td>
<td>−0.7</td>
<td>−0.22</td>
<td>0.83</td>
</tr>
</tbody>
</table>

### Effects specification

- $R^2$: 0.83
- Adjusted $R^2$: 0.05
- Durbin–Watson stat.: 1.87
- $F$- statistic: 14.78
- $\chi^2$ statistic: 17.603842
- $\chi^2$ df: 9
- Prob.: 0.0401

**Notes:**
- The fixed effect panel equation \( \log(\text{ROA}_t) = \beta_0 + \beta_1 \log(\text{TICE}_t) + \beta_2 \log(\text{IITF}_t) + \beta_3 \log(\text{CAR}_t) + \beta_4 \log(\text{ALF}_t) + \beta_5 \log(\text{CRDR}_t) + \beta_6 \log(\text{CDR}_t) + \beta_7 \log(\text{TDOF}_t) + \beta_8 \log(\text{QR}_t) + \beta_9 \log(\text{IEIE}_t) + u_{it} \) and random effect panel equation \( \log(\text{ROA}_t) = \beta_0 + \beta_1 \log(\text{TICE}_t) + \beta_2 \log(\text{IITF}_t) + \beta_3 \log(\text{CAR}_t) + \beta_4 \log(\text{ALF}_t) + \beta_5 \log(\text{CRDR}_t) + \beta_6 \log(\text{CDR}_t) + \beta_7 \log(\text{TDOF}_t) + \beta_8 \log(\text{QR}_t) + \beta_9 \log(\text{IEIE}_t) + u_{it} + \epsilon_{it} \) have been used in this table for the regression analysis purpose. Cross-section random, and Idiosyncratic random effects have been done under effects specification module. Durbin–Watson test has been used for checking autocorrelation and heteroscedasticity. Anova $F$-test has also used for testing good fit of this model. *, **, *** Significant at the 1, 5 and 10 percent levels, respectively.
The FE model is significant, the $\chi^2$ value of this test is 17.60 at the 5 percent level of significance. The Husaman’s specification test recommends that the FE model is suitable for this study. The FE model is significant with the following variables which include advances to loans funds, CAR and CRDR, whereas other independent variables, i.e. IEIE, CDR, ALF, QR, IITF, TDOF and TICE, have been found insignificant with the ROA for all the banks in India.

**Conclusion and implication**

We had applied panel data regression for the profitability measures of the Indian banks, panel regression is quite authenticated and reliable analysis techniques. Subsequently after conducting an inclusive profitability analysis of the Indian banking sector (private and public), we arrived at the following conclusions: IEIE ratio and CRDR are reducing the profitability of private banks. On the other side, interest earned ratio, CRDR and QR are reducing the effectiveness of public banks. It seems that public banks are not capable to maintain their QR as compare to private banks up to a standard limit, so that it is reducing their profitability. However, public banks are focusing on CDR and advances to loan funds, increasing their profitability. Results describe that there is a positive association between CDR and advances to loan funds with the profitability of public banks. Findings reveal that interest expended to CRDR and total debt to owners fund are reducing the profitability of private banks in India. On the other side, CRDR, advances to loan funds and QR are increasing the profitability of private banks in India. It seems that private banks are able to maintain their ROA ratio in good condition as compare to public banks. However, results describe that there is no association between various financial ratio and with the profitability of public banks, while taking ROA as a profitability measure.

Indian companies should also try different strategies like offering more options to consumers, lenders, and borrowers to try and generate more revenue. We recommend that PSU’s banks should and be competitive and must allocate some funds to improve their image. Finally, we suggest that private banks should try to boost the CRDR and interest expended to interest earned to generate more revenue than to spend on various services (Tables XX and XXI).

**Table XX.** Summary for profitability (net profit margin) with private, public and total banks

<table>
<thead>
<tr>
<th>Dependent variable (net profit margin)</th>
<th>Private bank</th>
<th>Public bank</th>
<th>All banks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td>Fixed panel</td>
<td>Random</td>
<td>Fixed panel</td>
</tr>
<tr>
<td>Interest income to total funds ratio (IITF)</td>
<td>No effect</td>
<td>Positive</td>
<td>No effect</td>
</tr>
<tr>
<td>Interest expended to interest earned (IEIE)</td>
<td>Negative</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Credit deposit ratio (CDR)</td>
<td>No effect</td>
<td>Negative</td>
<td>No effect</td>
</tr>
<tr>
<td>Cash deposit ratio (CDR)</td>
<td>No effect</td>
<td>Negative</td>
<td>No effect</td>
</tr>
<tr>
<td>Capital adequacy ratio (CAR)</td>
<td>No effect</td>
<td>Positive</td>
<td>No effect</td>
</tr>
<tr>
<td>Advances to loans funds (ALF)</td>
<td>No effect</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Quick ratio (QR)</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td>Total debt to owners fund (TDOF)</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td>Total income to capital employed (TICE)</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
</tr>
</tbody>
</table>

**Notes:** Summary reveals that IEIE ratio and CRDR are reducing the profitability of private banks in India. On the other side, interest earned ratio, credit deposit ratio and quick ratio are reducing the effectiveness of public banks. It seems that public banks do not control their quick ratio as compare to private banks up to a standard limit, so that it is reducing their profitability. However, public banks are focusing on cash deposit ratio and advances to loan funds, increasing their profitability. Results describe that there is a positive association between cash deposit ratio and advances to loan funds with the profitability of public banks.
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Dougherty, C. (2007), *Introduction to Econometrics*, Department of Sociology, Baylor University, Oxford University Press, Waco, TX.


---

<table>
<thead>
<tr>
<th>Dependent variable (return on assets)</th>
<th>Private bank</th>
<th>Public bank</th>
<th>All banks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest income to total funds ratio (IITF)</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td>Interest expended to interest earned (IEIE)</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td>Credit deposit ratio (CRDR)</td>
<td>Negative</td>
<td>No effect</td>
<td>Positive</td>
</tr>
<tr>
<td>Cash deposit ratio (CDR)</td>
<td>Positive</td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td>Capital adequacy ratio (CAR)</td>
<td>No effect</td>
<td>Positive</td>
<td>No effect</td>
</tr>
<tr>
<td>Advances to loans funds (ALF)</td>
<td>Positive</td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td>Quick ratio (QR)</td>
<td>Positive</td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td>Total debt to owners fund (TDOF)</td>
<td>Positive</td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td>Total income to capital employed (TICE)</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
</tr>
</tbody>
</table>

**Notes:** Summary reveals that interest expended to credit deposit ratio and total debt to owners fund are reducing the profitability of private banks in India. On the other side, credit deposit ratio, advances to loan funds and quick ratio are increasing the profitability of private banks in India. It seems that private banks are able to maintain their return on assets ratio in good condition as compare to public banks. However, results describe that there is no association between various financial ratio and with the profitability of public banks, while taking return on assets as a profitability measure.

---

**Table XXI.** Summary for profitability (return on assets) with private, public and total banks

---

Evaluating factors of profitability


Further reading


Further reading


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Media Reports, Press Information Bureau (PIB), December 2016 Edn.

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