Investment Appraisal Methods and Stock Value of Quoted Small and Medium Scale Enterprises: An Estimated Panel Data Study from Nigeria

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DOI: 10.56201/jafm.vol.11.no11.2025.pg1.18

Abstract
This study examined the relationship between investment appraisal methods and stock value of quoted small and medium scale enterprises in Nigeria. Cross sectional data was sourced from financial statements of the quoted small and medium scale enterprises. Stock value was modeled as the function of accounting rate of return, internal rate of return, net present value, payback periods and profitability index. A pooled panel regression model was adopted to estimate the regression equation. After cross sectional validity of the models, the results validate the use of fixed effect model. The study found that investment appraisal techniques explained 41.6 percent movement on stock value of the quoted small and medium scale enterprises firms and that accounting rate of return have positive and significant effect on stock value, that internal rate of return have negative and significant effect on stock value, that net present value have negative and significant effect on stock value, that payback period have negative but no significant effect on market value while profitability index have positive and significant effect on stock value of the quoted small and medium scale enterprises. From the findings, the study concludes that investment appraisal methods do not determine stock value of the quoted small and medium scale enterprises. It recommends that management of the quoted small and medium scale enterprises should study investment evaluation techniques, their advantages and disadvantages in relation to their stock valuation. Knowing these factors of influence will enable small and medium scale enterprises to make better investment decisions by selecting the right investment evaluation technique.

Keywords: *Investment Appraisal, Methods, Stock Value, Small and Medium Scale Enterprises, Panel Data Study, Nigeria*

INTRODUCTION

The reasons for business valuation can be numerous - however all motivations here considered mainly concern the process of changes in ownership arrangements. The most important reasons for valuation are the following: the contribution of a business or a business unit/area as a going concern in a new company; the recess of a partner from an enterprise; transfer of a business or a business unit or shareholdings; mergers and acquisitions; the expert's report for civil suit; definition of new arrangements because of the entrepreneurial succession process and monetary revaluation of minority shareholdings such as unlisted in the stock exchange market to benefit of fiscal advantages, informational/strategic purpose. The valuation can be classified into three typologies depending on the degree of formalization: informal, formal or official. The informal valuation is voluntary and not binding, whereas the formal valuation is equally voluntary but

binding among counterparts. From a theoretical viewpoint, the corporate value should be defined through capitalization of future earnings. But the practice application of this income statement-based method is not always possible, especially in small and medium scale enterprises, in which planning and budgeting systems are absent. Additionally, the method selection especially depends on the purpose of business valuation.

Several studies examining the usage of the different methods for the financial evaluation of investment projects in firms have been conducted throughout the world. These surveys indicate a clear trend towards the application of the more sophisticated discounted cash flow methods such as the Net Present Value and the internal rate of return. Bierman (2007) called the increasing popularity of applying discounted cash flow methods and thereby replacing the payback period and the accounting rate return as the first revolution in capital budgeting. However, the payback period still remains popular, especially as a secondary method to evaluate a potential investment project. A further review of available literature and research papers suggests that it is not sufficient to purely rely on the financial evaluation of investment projects using the different methods discussed in this chapter. The evaluation of the financial characteristics of investment projects needs to be combined with sophisticated tools for further analysis. Harmantzis (2007) provided an example of applying the NPV combined with another tool of financial evaluation (in this case real options, being discussed later) to perform a financial evaluation for a complex investment project in the wireless industry. Another advocate of this approach is Kayali (2006). Kayali (2006) argued that the pure usage of the traditional investment project evaluation metrics (payback period, ARR, IRR, NPV) assume that the management of a firm is passive, not reacting to any changes that may occur.

According to the Pecking Order Theorem companies usually go public after having exhausted internal sources of financing. Thus, listing in securities and stocks exchange allows companies to overcome borrowing constraints associated with debt financing. From this point of view, companies with higher investment needs are more likely to go public. Amadi, (2005) indicate that there is a need to approximate investment needs by capital expenditures on property plant and equipment (Capex) and sales growth. Listing on a stock exchange plays a role in creating public visibility of a company hence increasing its recognition among a larger set of investors. Lev and Thiagrajan (1993) stated that capital investments represent a fundamental signal claimed by analysts to be useful in predicting future profitability and stock returns. Gitau (2012) reported that due to the developing nature of the Nigeria and other developing financial markets, and the rapid population growth rate, firms are able to identify growth opportunities with relative ease. These opportunities require investment in capital expenditure in order for them to be realised.

Despite the importance of capital expenditure, there are few empirical studies that discuss capital expenditure and value of quoted firms in emerging financial market like Nigeria. Most previous studies related to capital expenditure studies focused on capital expenditure of the government and how it relates to economic growth (Kim, 2001; Turner &Hesford, 2019). Existing studies on the effect of corporate capital expenditure focused on capital expenditure and company performance (Canace, Jackson, & Ma, 2018; Chen & Chang, 2020; Kothari, Laguerre, & Leone, 2002; Moser et al., 2021).

LITERATURE REVIEW

Investment Appraisal Techniques

Investment Appraisal Techniques are tools which can assist owners or decision makers of firms to evaluate and select investment projects/business (Mwarari and Ngugi, 2013). These

techniques are grouped into two; discounted cash flow methods and non-discounted cash flow methods. According to Kilonzo (2011) Investment Appraisal Techniques such as Accounting Rate of Return, payback period, Internal Rate of Return and Net Present Value are important measurements used by businesses in making decisions as they focus on actual operations and eliminates one- time expenses and noncash charges hence giving a clear picture of what the firms are doing.

The Investment Appraisal Techniques used by most firms operating in Nairobi includes the non-discounted cash flows such as payback period, Accounting Rate of Return, Discounted Cash flow methods such as Net Present Value and Internal Rate of Return(Guda, 2013). Several studies have been conducted on investment decision practices, and on the use of investment appraisal techniques in different countries. These studies are: Danielson and Scott, (2006) in USA; Isaga (2012) in Tanzania; Katabi and Dimoso (2016) in Tanzania and Karanja (2012) and Guda (2013) in Nigeria. These studies in most cases indicated the most widely used investment technique. However, it was most important to know beyond the reasons given for the use of an investment evaluation technique by understanding the influence on the selection and adoption of a certain investment appraisal technique.

Pay Back Period Technique

CIMA (2002) defines payback as 'the time it takes the cash inflows from a capital investment project to equal the cash outflows, usually expressed in years'. When deciding between two or more competing projects, the usual decision is to accept the one with the shortest payback. Payback is often used as a "first screening method. The Payback period (PBP) method tells the duration it is expected to take to recover the principal investment from the net cash flows of an investment asset or project. Although research has revealed that it is the most popular investment appraisal method used by businesses and individuals especially in the small and medium enterprises (SMEs) due to its simplicity, it has been tested over the years and found to be suffering from serious shortcomings (Adeniyi et al, 2012). Due to the weaknesses of the PBP method, Watson and Head (2007) stated that it should not be regarded as one of the investment appraisal techniques for decision making but should rather be used to screen and rank investment for further appraisal to be conducted.

Net Present Value (NPV) Technique

Net Present Value (NPV) is the present value of the cash flows at the required rate of return of your project compared to your initial investment. For instance, in computing the projects net present value, the cash flows occurring at different points in time are adjusted for the time value of money using a discount rate that is the minimum rate of return required for the project to be acceptable. Projects with positive net present values (or values at least equal to are acceptable and projects with negative net present values are unacceptable. In case the project is rejected, it is rejected because cash flows will also be negative. The NPV compares the value of the dollar today to the value of that same dollar in the future taking inflation and returns into account (Awomewe & Ogundele, 2008). The advantages of the net present value method is that it is consistent with the theory of wealth maximization, it considers the time value of money, and also makes use of all the project cash flows throughout the duration of the projects life (John & Nwokoye, 2015). The disadvantages are that it requires estimates of cash flows which is cumbersome to calculate. The biggest disadvantage to the NPV method is that it requires some guesswork about the firms cost of capital. Assuming a cost of capital that is too low will result in

making suboptimal investments, and assuming a cost of capital that is too high will result in forgoing too many good investments.

Internal Rate of Return (IRR) Technique

The internal rate of return (IRR) is the discount rate often used in capital budgeting that makes the net present value of all cash flows from a certain project equal to zero. This in essence means that IRR is the rate of return that makes the sum of present value of future cash flows and the final market value of a project (or investment) equals its current market value. The internal rate of return provides a simple hurdle, whereby any project should be avoided if the cost of capital exceeds this rate. According to McWatters et al., (2001) the internal rate of return is that discounted rate at which the presented value of projected future cash flows calculated for each project, equal to present value of initial investment and it causes the net present value equal to zero. IRR and NPV are best but conflicting results arise when we do ranking of mutually exclusive projects. When time and cash flows of projects differ with one another then conflicts arises. If IRR is less than the required rate of return then project must be rejected because it will give the negative NPV (Umair, 2015).

Profitability Index (PI) Technique

Profitability Index (PI) is the ratio of the present value of future cash benefits at the required rate of return to the initial cash outlay, and thus referred to as "Benefits-Cost Ratio" Project is considered to accept if Profitability index is greater and equal to 1 (Umair, 2015). The advantages of PI are that it recognizes time value of money, and it is also consistent with wealth maximization principle. The disadvantages are that it requires estimates of cash flows which is cumbersome to calculate. At times, it fails to indicate the correct choice between mutually exclusive projects (Saleh, 2005). This investment appraisal method is also a discounted cash flow technique used to ascertain a ratio of the sum of the present values (PVs) of cash inflows of a project to its' initial investment which is then compared with a bench mark ratio of 1 to determine the viability or profitability of a project.

Accounting Rate of Return (ARR)

Also known as the average rate of return, it bases project evaluation on average income rather than the projects cash flows. Unlike the payback period, this technique produces a percentage rate of return figure which is then used to rank the alternative investments (Kitili & Nganda, 2014). The main advantages of this method are its simplicity of understanding and usage, given that the figures used in calculations are those provided by accounting reports. However, this method presents some important weaknesses. First, it does not take into account the time value of money. There is no objective way of determining the minimum acceptable rate of return (Akalu, 2001; Afonso & Cunha, 2009).

Payback Period (PBP)

The payback period method tells the duration it is expected to take to recover the principal investment from the net cash flows of an investment or project. Payback period is said to emphasize the management's concern with liquidity and the need to minimize risk through a rapid recovery of the initial investment. The use of the payback method as the only or the major method seems to be more commonly used in small and medium-sized companies. The major deficiencies of the payback method are that it ignores cash flows after the payback period and

that it does not measure the time value of money in correct manner. This method is commonly used in pure profit evaluations as a single criterion and also sometimes used when focusing on aspects such as liquidity and project time risk. The obvious cases of profitable and unprofitable investments are sorted out, when the payback method is used as the first screening device, leaving only the investments that have survived the screening process in the middle group to be scrutinized by means of more advanced and more time consuming calculation methods based on discounted cash flows (DCF), such as the Internal Rate of Return (IRR) and Net Present Value (NPV) methods. However, it should be noted that there are many companies of considerable size, where the payback period is used as the single criterion in investment evaluations (Blatt 1979; Awomewe & Ogundele, 2008).

Corporate Valuation

The increase of company values the reflection of shareholders' funds optimization, which is frequently valued by Price to Book Value (PBV). This ratio shows the willingness of investors to buy shares with the price at above or below the nominal value. The higher the value ofa company the more prosperous the owners are. Thus, the value of company in investors' and creditors' view is very important that they become more selective in investing and providing credit for the company.

Modigliani and Miller's Theory on Investment (1958)

Modigliani and Miller (1958) argue that managers should ignore financing and dividend decisions as irrelevant and focus on positive net present value (NPV) investment opportunities that would maximize the value of the firm. Thus the analytical framework for determining a project's NPV as derived from discounted cash flows analysis (DCF) came to provide a rational basis for collective decision-making.

The classical theory by Modigliani and Miller (1958) identifies sophisticated evaluation methods as a tool for maximizing the profitability of the small firms. Hastie (1998) on the contrary regarded the financial theory that recommends the utilization of sophisticated techniques such as net present value to improve decision making and maximize the value of the firm as unwarranted. Hastie objected to these assumptions (a statement that is assumed to be true and from which a conclusion can be drawn) because there are many more "apparently acceptable" projects than a firm can approve either because of limited capital or raw materials or because of limited management or technical talent which is common amongst small firms. Hastie noted that the use of incorrect assumptions has been a more significant source of bad investment decisions than the use of simple measurement techniques. Investment decision making could be improved significantly if the emphasis were placed on asking the appropriate strategic questions (important) and providing better assumptions rather than on increasing the sophistication of measurement techniques.

Adler (2006) argued that discounted cash flow should be removed from financial theory as it is increasingly irrelevant to contemporary business practice and can be dangerous in evaluating proposed projects. He further illustrated that DCF can be used accurately from the position of hindsight, but it is little help in predicting the future course of business. He argued that a "gut feeling" can be put to better use than strict mathematical models of potential profits in deciding to pursue a new venture. He concluded that DCF is meaningless and as such should not be applied in evaluating capital budgeting decisions or rather should be replaced with less restrictive and more optimistic methods. The internal rate of return (IRR) method assumes re-investment of

the funds at the IRR. Finally, the net present value (NPV) method requires an appropriate discount rate to value expected cash flows. The NPV method may underestimate the value of the investment project and may cause the management to pass up valuable investment opportunities, therefore, in general, they do not provide owner/managers with the flexibility they need when making strategic investment decisions.

Brink et al. (2003) noted that turnovers of SMEs in South Africa are low and are decreasing because of factors such as small market size, low demand and a lack of sufficient knowledge on competitors. SMEs rarely conduct marketing research on their competitors and the needs of their customers. They also suffer from marketing factors such as insufficient marketing, misreading of customers' trends and needs and poor location. The high level of illiteracy among the owners/managers of small firms in South Africa, suggest that the lack of application of sophisticated investment appraisal techniques will have a negative impact on their profitability.

Empirical Review

Bulama and Musa (2023) examined the role of investment appraisal or capital budgeting techniques in determining the profitability of proposed projects. The paper relies heavily on journal articles, textbooks and other relevant materials for reviews and findings. Based on the extant literature, it was found out that the capital budgeting techniques commonly used in evaluating the profitability of projects are- pay-back period, accounting rate of return, net present value, internal rate of return, and profitability index. It was also found out that most companies, especially the small manufacturing firms do not make use of sophisticated investment appraisal techniques. They largely rely on the non-discounting techniques, which ignores the time value of money. Large firms are more inclined towards using sophisticated techniques rather than their small counterparts. This research adds to the body of knowledge on capital budgeting in general. It is expected to assist management in choosing the best capital budgeting technique in the evaluation of its future investment projects. Finally, useful suggestions and recommendations were provided on how companies can improve their decisions on investment and thus their level of profitability. Fairfield, Whisenant and Yohn (2023) study the relationship using return on assets, an accounting based measure of financial performance. Following a financial statement analysis study, they document a negative association between growth in net long term operating assets and one year ahead future return on assets.

Danquah (2022) examined determinants of choice of appraisal methods for investment appraisal by firms in Ghana using some selected firms in Kumasi. The study specifically sought to: determine whether investment decisions are appraised and determine the reason for the choice of a particular method of appraisal. The study adopted a quantitative approach using a descriptive survey design. The study employed a multiple case study design, focusing on ten (10) selected companies in the Ashanti region of Ghana. The target population for the research comprised all employees of the finance departments of ten (10) selected companies in the region. A sample size of fifty (50) respondents, representing over 10% of the total population was used. Purposive and random sampling techniques were used to select these fifty (50) respondents from the companies of the population. The study showed that indeed investments decisions are appraised in Ghanaian companies. This was confirmed by 40 respondents representing 80% of the sampled population. The study further revealed that, Viability and Profitability of any Investment Project was the most popular reason for choosing a particular type of appraisal method. This was evidenced in the overwhelming confirmation it received as a viable reason for picking an

appraisal method.

Enweluzor (2016) studied assessment of capital budgeting techniques and model and its effect on organizations profitability: an accountant approach, a case study of WINCO foam manufacturing firm, Anambra state. 40 accounting officers were used for the study. The major purpose of the study was to observe and assess capital budgeting techniques and models, and its effect on company's profitability. It was found that: 1) company's profitability is influenced by the capital budgeting model adopted; 2) discounted techniques are preferred to non-discounted techniques; 3) capital revenue and profit are related as while capital revenue is entirely charged to profit, capital expenditures are not; 4) Nigerian companies do not assign capital budgeting full time to a staff but to a committee when faced with such decision; 5) NPV technique is the most widely used amongst Nigerian companies. The present study is highly related to this study in that both focused the use of capital budgeting by manufacturing companies.

Etim (2019) determined the extent to which capital expenditure decisions made by listed manufacturing companies in Nigeria relate with the value of the firms in the long term. The ex post facto and correlational research designs were adopted for the study. Secondary data were extracted from the Nigerian Stock Exchange Fact Books for the period, 2010 – 2016. The number of manufacturing companies listed in the Stock Exchange during this period was 83, and the sample size used was 69. With the aid of regression analyses, the findings revealed that capital expenditure decisions had a significant relationship with long term value of manufacturing firms. The study concluded that capital expenditure decisions have a significant relationship with the long term value of manufacturing firms in Nigeria. It was recommended that management of manufacturing companies should ensure the holistic use of all techniques, exploring risks, real and growth options analyses as well as portfolio management techniques involving capital assets, in appraising capital investments before taking decisions.

Hendri and Juniarti (2022) examined effect of capital expenditure on the long-term performance on companies listed on the Indonesia Stock Exchange (IDX). Fundamental measurements were used as the internal perspective of performance; this study also tries to fill the gap due to the lack of studies that discuss capital expenditure in Indonesia by providing empirical evidence regarding capital expenditure in the context of Indonesia's stock market. Capital expenditure is represented by the growth of fixed assets for the current period. The long-term performance utilizes earnings persistence and is measured using the regression of ROA and ROE for the past six years, and then the coefficients are determined using the lags of ROA and ROE in the three years after capital expenditure. The sample comprises "big cap" companies listed on the IDX at the beginning of the sample period (in 2016) and for four years of the sampling period (2016–2019) with a total of 240 observations. The companies sampled should fulfill the criteria of having complete financial data for the six years before the sampling period. The hypothesis testing proves that capital expenditure impacts long-term performance, with no evidence to the contrary. Additional testing utilizing the control variables generated additional interesting results with important implications

Herliansyah (2019) examined the influence of capital expenditure variables, company growth, and company size on firm value through financial performance is moderated by the capital structure of the company in LQ 45 companies listed on the Indonesia Stock Exchange. The

research methodology uses quantitative methods, the number of observations as many as 50 sourced from 45 companies over 5 annual periods. The results of this study found that: (1) Capital Expenditure (Capex), Company Growth (Growth) and Company Size (Size) had no effect on Company Value (PBV), (2) Capital Expenditure (Capex) does not affect Financial Performance (ROE), (3) Company Growth (Growth) and Company Size (Size) have a significant effect on ROE, (4) Financial Performance (ROE) has a significant positive effect on Value Company (PBV), (5) Financial Performance (ROE) does not mediate the effect of Capital Expenditure (Capex), Company Growth (Growth) and Company Size (Size) on Firm Value (PBV), (6) Capital Structure (DER) moderates the influence of Financial Performance (ROE) to Company Value (PBV).

Kaijage and Elly (2014) did a study on the choice between debt and equity that SMEs face by investigating the influence of various corporate characteristics on the capital structure of deposit taking microfinance institutions (DTMs), as a special group of SMEs, in Kenya. Using secondary data from financial reports of 7 out of 9 licensed DTMs in Kenya for the period 2008 to 2012, the study applied ordinary least squares (OLS) fixed - effect regression models. Capital structure was measured by debt equity ratio while corporate characteristics considered were: size, profitability, liquidity, and growth, tangibility of assets and volatility of earnings. The study revealed that size and growth positively influence, in a significant way, the capital structure. Furthermore, liquidity, profitability, and tangibility of assets negatively influenced the capital structure. Brijlal and Quesada (2019) found that payback period, followed by NPV appeared to be the most used methods across the different sizes of businesses. Graham, John, Harvey, & Campbell (2001) observed that small businesses are significantly less likely to use NPV method but they frequently use the payback period method. No relationship existed between the choice of DCF and business characteristics. This means that businesses do not select DCF methods instead they rely on payback period method to evaluate their investments. Net present value is the current value of a stream of income discounted by a factor over the period of an investment (Geddes, 2006).

Kengatharan and Nurullah (2018) examined Capital Investment Appraisal Practices in the Emerging Market Economy of Sri Lanka. From the study, it was deduced that the most popular capital investment appraisal techniques used in Sri Lanka encompass Net Present Value (NPV), followed by Internal Rate of Return (IRR), Payback (PB), Accounting Rate of Return (ARR) and Discounted Payback (DPB). As for the capital investment appraisal tools incorporating risks, Sri Lankan firms prefer uncertainty absorption in cash flows, followed by sensitivity analysis, probability analysis, scenario analysis, and adjusting the required returns. Farah and Altinkaya (2018) studied Capital Budgeting Decisions and Profitability in Manufacturing Firms in Uganda and the findings also revealed that there is significant and positive correlation between five dimensions of capital budgeting decisions and profitability of the organizations. The findings set up that there was relationship between the independent variables of capital budgeting decisions and profitability and were positive relationships between capital budgeting and profitability of the firms under the study.

Kenny and Luqman (2019) investigated firm's characteristics effect on financial reporting quality of Nigerian quoted manufacturing companies. Twenty-five (25) non-financial companies from 2009 to 2016 were used as sample. Balanced panel data was extracted via secondary source

through the audited reports of the selected companies. Techniques adopted were multiple regressions and modified Dechow and Dichev's (2002) model was used to proxy quality of financial reporting. Firm size, profitability, firm tangibility and growth represented firm characteristics. Findings revealed firm size and profitability have significant positive influence on quality of financial reporting, while tangibility and firm growth were documented to have significant but negative influence on quality of financial reporting. Hope and Kemebradikemor (2019) examined the influence of board characteristics on financial reporting quality of quoted manufacturing firms. The study used multi-method quantitative design and Generalized Linear Model was employed to test the hypotheses formulated. The findings revealed board independence as well as board diversity to have significant influence on financial reporting quality at 5 percent significance level.

Kipesha (2019) observed that most of SMEs do not use the DCF methods; rather they select investments basing on their personal perception, market trends and external attractiveness of the investment. According to the study conducted by Danielson and Scott (2006), it was indicated that ARR was the frequency choice for businesses pursuing growth strategy. The ARR is valuable because it provides information about how a project will affect businesses' financial statements and its ability to meet accounting based loan covenants. There is evidence from the study that business characteristics affect the choice of investment evaluation techniques.
Kleczyk (2018) stated that the level of the projects' internal rates of return for different strategies is one of the most important decision factors when deciding which new products to develop and which new investment program to conduct. In Tanzania, a study conducted on the effect of Small Business Characteristics on the Choice of Investment Evaluation Techniques for SMEs in Tanzania employed a cross-sectional design and the method of the study was the survey. Purposive sampling was used to collect data to a sample of 301 SMEs drawn from SIDO in Dar es Salaam and Dodoma regions and multinomial logistic regression was used as the most appropriate statistical technique. The findings revealed that Small Business Characteristics significantly influence the choice for Net Present Value (Katabi & Dimoso, 2016). Pearce (2019) investigated the impact of capital budget decision on financial performance of commercial banks in Sierra Leone and was able to find out that the implementation of the payback period technique in capital budgeting decision is highly correlated with commercial banks performance followed by three other techniques except for the internal rate of return technique that was negative and insignificant in both the correlation and regression results.

Ndanyenbah and Zakaria (2019) on the application of investment appraisal techniques (IAT) by Small and Medium Enterprises (SMEs) Operators in the Tamale Metropolis Ghana, it was revealed that SME operators in the Tamale Metropolis had significant knowledge in the various basic IATs. There was also a significant application level of the IATs by the SME operators. Although the SME operators demonstrated significant knowledge and application level in the various IATs, it was discovered that they did not use the theoretical mathematical formulae of the IATs in appraising their investments. It was also discovered that operator's knowledge in an IAT had insignificant influence on its' application by the operator. The choice of the IATs by the SME operators was found to be significantly influenced by the SME Operator's gender, educational level and risk behaviour and the investment size and the business or industry type.
Oyedele (2017) adopted a survey design conducted a study on budgeting and budgetary control: tool for economic development of small and medium scale industries in Rivers state of Nigeria.

The population of his study comprised of 80 Accounting staff of 39 small and medium scale industries in Rivers state. The major purpose of the study was to determine whether budgeting and budgetary control serve as a tool for economic development of small and medium scale industries. It was found that budgeting and budgetary control procedures in small and medium scale industries have not quite attained a sufficient level to enhance total accomplishment of the industry's objectives; and that small and medium scale industry's success was not as a result of corrective actions taken when budget variance exist, rather as a result of proper planning and control of budgeting and budgetary practices.

Richardson, Richard, Sloan and Irem (2023) find a similar association and attribute it to the lower reliability of long term asset accruals. Chen, Yao, Yu, and Zhang (2022) examine the effect of corporate asset growth on stock returns using data on nine equity markets in the Pacific-Basin region. They find a pervasive negative relationship between asset growth and subsequent stock returns during the sample period from 1981 to 2004. Similar findings are documented by Cooper, Gulen, and Schill (2018) who studied firm asset growth and subsequent stock return. The study ranked firms in the U.S market during the period 1968 to 2003 into rankings based on their level of asset growth. They show that firms with high asset growth had a 20% lower return than firms with low asset growth or capital expenditure. Moser et al. (2021) attempted to evaluate the interplay between market conditions, capital expenditure, manufacturing flexibility, and production capacity in order to effectively analyze the consequences of manufacturing investments in the mining, oil and gas sectors in both the short and long terms. They attempted to develop a firm value driver model, which shows that higher capital expenditure will impact higher market valuation in the long term due to higher production capacity. The long-term impact of capital expenditure on firm performance could also be associated with the earnings persistence concept.

Siziba and HenryHall (2022) examined the evolution of the application of capital budgeting techniques. Previous studies mostly used cross-sectional inquiries to understand the capital budgeting practices of firms. Only a few researchers have undertaken longitudinal studies to generalise the findings of the individual cross-sectional studies to the wider population and to identify the emerging trends in the use of capital budgeting techniques (CBTs). This longitudinal study surveys studies of capital budgeting practices across firms in India, South Africa, the United Kingdom (UK) and the United States of America (USA) for the period from 1966 to 2016. The findings show that six capital budgeting techniques, namely, the net present value (NPV), the internal rate of return, the payback period (PBP), the accounting rate of return (ARR), the return of investment (ROI) and the real option valuation (ROV), are the most popular methods for evaluating capital investments. Of these techniques, the ROV is the least used, and a general lack of familiarity with this technique and its complexity are the most commonly cited reasons for not using it. Another method that is used less than the first four techniques is the ROI. However, this technique is of growing significance and is mainly used in the UK, followed by the USA, South Africa, and India. Firms in the USA and UK have increased their use of the IRR as a primary method for evaluating capital projects and have retained the PBP as an ancillary technique to strengthen the available information when evaluating capital projects. Firms in India and South Africa are increasingly excluding both the PBP and ARR methods and are increasingly using the NPV when evaluating capital investments. Although this development is in line with the theory, it limits the scope of the available information when evaluating capital projects.

Taipiand Ballkoci (2019) investigated the link between the capital expenditures and firm performance of Albanian firms in the construction sector, based on the data collected from 30 firms between 2008 and 2015. The study took into consideration the fact that capital expenditures is not the only variable that influences the model and as a consequence other variables affecting financial performance were analyzed, which are: leverage ratio and firm size. The linear regression model was used to analyze this relationship. According to the survey the model was explained 63% by the chosen variables. The regression analysis indicated that capital expenditures and leverage ratio are statistically significant and positively correlated with the financial performance of the firm. On the other side, the size of the firm is not a statistically significant variable and it is also negatively correlated with firm performance.
Temuhale and Ighoroje (2022) examined the effect of asset structure and capital structure on the performance of quoted industrial goods firms in Nigeria within 2011-2019. The study was structured into two models with property, plant, and equipment (PPE), other fixed assets (OFA), and current assets (CAS) as explanatory variables for the asset structure model; long term debt to total equity (LTDTEQ), long term debt to total asset (LTDTAS), long term debt to long term capital (lTDTLC) as explanatory variables for the capital structure model while performance was represented in each model by return on asset (ROA). Data were sourced from the companies' annual statements of financial position and statements of profit and loss. The study employed descriptive statistics, correlational and panel data as methods of data analysis. Findings showed that while all the asset structure variables had a positive but insignificant effect, capital structure variables viz; ratio of long term debt to total equity, ratio of long term debt to total asset each had positive and significant effect and ratio of long term debt to total long term capital had an inverse and significant effect on return on assets of industrial goods firms in Nigeria. The study therefore concluded that while asset structure does not meaningfully affect the performance of industrial goods firms, capital structure has a positive effect. The study encouraged the firms to consider acquiring more long term debts to finance their operations and avoid investing too much on fixed assets.

Ugwuanyi (2016) adopted a descriptive survey design to carry out a study on the relevance of budgeting and budgetary control in manufacturing companies, a case study of Nigerian Bottling Company Plc, Enugu. The population of the study was 190 staff of Nigerian Bottling Company Plc, Enugu. The major purpose of the study was to assess the relevance of budgetary control in manufacturing companies. The principal findings of the study among others were: 1) that budget serves as an effective means of planning business activities; 2) that budget variance which occur in the course of budget monitoring are analyzed and used as a corrective measure for future planning; 3) the responsibility holders are often not allowed to continuously control their units budget, especially in turbulent business years; 4) efficient budgetary control leads to improved business activities; 5) the major problem encountered by the company in the budgetary control activities is the misunderstanding of the essence of budgetary control measures by some functional managers.

METHODOLOGY

This study examined the relationship investment appraisal techniques, and market valuation of quoted alternative firms in Nigeria, Secondary data were used. Ex-post facto research design was employed in obtaining, analyzing and interpreting the relevant data for hypotheses testing.
The secondary data was used in this study which was sourced from the financial statement of the

quoted small and medium scale enterprises, Nigeria Exchange Group Facts Book and Central Bank of Nigeria Statistical Bulletin. The population of this study comprises 10 quoted small and medium scale enterprises on the floor of Nigeria Exchange Group.

Model Specification

These analytical techniques enabled the researcher attain justifiable and robust results.

$$Y = \beta_0 + \beta_{1Xit} + \mu \quad (1)$$

Where Y = Dependent Variable

β_{1Xit} = Independent variable

β_0 = Regression Intercept

μ = Error Term

Disaggregating Equation 3.1 to form the multiple regression models, we have, the model specified in this study was adopted from Babalola (2012).

$$SV = F(NPV, IRR, PI, ARR) \quad (2)$$

Where:

SV= Stock value

ARR = Accounting Rate of return

PBP = Payback periods

NPV = Net present value

IRR = Internal rate of return

PI = profitability index

α_0 = Intercept

$\alpha_1 - \alpha_7$ = coefficient of independent variables to the dependent variable.

et = error term

A-priori Expectation = β1, β2, β3, β4 and β5 > 0

Technique for Analysis

Panel data structure allows us to take into account the unobservable and constant heterogeneity, that is, the specific features of each quoted firm. The researcher will employ pooled Ordinary Least Square (OLS), Fixed Effects and Random Effects regression models to test the various hypotheses. Pooled OLS regression technique is popular in financial studies owing to its ease of application and precision in prediction (Alma, 2011).

In addition, OLS method has been employed in a wide range of economic relationships with fairly satisfactory results (Koutsoyiannis, 1977). Citing the work of Gaur and Gaur (2006), Alma (2011) stressed that fixed effects and random effects models will aid to observe variations among cross-sectional units simultaneously with variations within individual units over time. This undermines an exploration of the effect of slow changing within individual firms' factors. Hence, the rationale for adopting Fixed Effects and Random Effects models estimator as additional test is to enable the researcher control time contrast and time invariant variables, and thereby control for the effect of the unobserved heterogeneity in the dataset. Ujunwa (2012) opines that coefficient of estimations are reliable when regression parameters do not change over time and do not differ between various cross-sectional units. Therefore, when the regression estimation differ widely between the two models (Fixed and Random Effects models), the adoption of

Hausman test will be essential. Panel data over the period from 2010-2016 is used and in line with notable literature firm's performance measure was regressed on each of the variants of financial information and other control variables holding other factors that may affect market value not included in the equation constant.

Statistical Approach

(i) Coefficient of Determination (R^2): This is used to measure the extent to which the independent variables in the model can explain changes on the dependent variable.

(ii) T-Test: This is used to measure the significance of the independent variables to the dependent variable and the hypothesis was tested at 5% level of significance and at 95% confidence interval. The hypothesis for this test is stated as follows:

Null I hypotheses: H_0:$\beta = 0$, (Statistically not significant)

Alternate hypotheses; H_1:$\beta \neq 0$. (Statistically Significant)

And the decision rule states that "H_0" should be rejected when statistics is greater than the critical value, but when the T-statistics is lower than the critical value, the "H_0" is accepted.

(iii) F-Test: This is used to find out the overall significance of the regression model at 5% level of' significance. The hypothesis for this test is stated as:

Null Hypotheses; H_0: β_1-β_6 $=0$ (all slope coefficients are equal to zero)

Alternative Hypotheses: H_0: β_1-β_6 $\neq 0$ (all slope coefficients arc not equal to zero)

The decision rule for this test is that "H_0" should be rejected when F-statistics is greater than the critical value of F. hut when the F-statistics is lower, then the 'H0" is accepted while the Hi is rejected.

(iv) Test of Autocorre1ation

The Durbin Watson statistics is used in this research to test for the presence of autocorrelation. When there is presence of autocorrelation, the First order autoregressive scheme will be employed to correct ii. The hypotheses states that:

H_0: P = 0 (There is serial independence in the errors)

H_1: P> 0 (There is first order (AR) positive autocorrelation.

When the Durbin Watson Statistics (DW-Stat) is less than lower Durbin Watson (D_L), the null hypothesis (H_0) is being rejected hut if the Durbin Watson statistics is greater than the upper Durbin Watson (D_u), the null (H_0) is then accepted.

PRESENTATION AND DISCUSSION OF RESULTS

Table 1: Correlated Random Effects - Hausman Test

Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		15.967783	5	0.0069
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
PI	0.167565	0.277369	0.002108	0.0168
PBP	-0.160910	0.105705	0.006499	0.0009
NPV	-3.044052	-2.870558	0.247898	0.7275
IRR	-0.163240	-0.157495	0.000797	0.8387
ARR	-0.211156	-0.189935	0.005055	0.7654

Source: Extracted from E-View 9.0

The test above shows that all the models are statistically significant leading the rejection of null

hypotheses. This implies that the pooled effect model and the random effect model are rejected in favor of the fixed effect for the model. This confirms the result in the table above. The table 1 also reveals the variance difference among the variables, as shown above that the variables are all statistically not significant in the model except payback periods, this further validates the fixed effect model.

Table 2: Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PI	0.167565	0.143918	1.964309	0.0476
PBP	-0.160910	0.215376	-0.747108	0.4571
NPV	-3.044052	2.870732	-1.960375	0.0420
IRR	-0.163240	0.134119	-1.917131	0.0270
ARR	-0.211156	0.173645	-1.916024	0.0274
C	13.11505	1.903348	6.890518	0.0000
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.499924	Mean dependent var		9.833293
Adjusted R-squared	0.416578	S.D. dependent var		4.708615
S.E. of regression	3.596538	Akaike info criterion		5.536547
Sum squared resid	1086.547	Schwarz criterion		5.929747
Log likelihood	-259.0591	Hannan-Quinn criter.		5.695637
F-statistic	5.998174	Durbin-Watson stat		2.032765
Prob(F-statistic)	0.000000			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
PI	0.277369	0.136400	2.033505	0.0449
PBP	0.105705	0.199721	0.529262	0.5979
NPV	-2.870558	2.827225	-1.015327	0.3126
IRR	-0.157495	0.131115	-1.201197	0.2327
ARR	-0.189935	0.158421	-1.198931	0.2336
C	11.44714	1.905832	6.006375	0.0000
	Effects Specification			
			S.D.	Rho
Cross-section random			1.855523	0.2102
Idiosyncratic random			3.596538	0.7898
	Weighted Statistics			
R-squared	0.464277	Mean dependent var		5.165331
Adjusted R-squared	0.313970	S.D. dependent var		3.842018
S.E. of regression	3.802627	Sum squared resid		1344.778
F-statistic	1.277683	Durbin-Watson stat		1.757196
Prob(F-statistic)	0.280187			
	Unweighted Statistics			
R-squared	0.103306	Mean dependent var		9.833293
Sum squared resid	1948.303	Durbin-Watson stat		1.212870

Source: Extracted from E-View 9.0

From the table 2, the model coefficient showed that the investment appraisal techniques 41.6 percent movement on market value of the quoted small and medium scale enterprises firms

within the period covered in this study from the pooled effect model. The validity of the model using the F-statistics and the F-probability found that the model is statistically significant at pooled effect while the Durbin Watson statistics also justifies the absence of serial auto correlation. However, the regression coefficient which is the coefficient of the independent variables to the dependent variable found that accounting rate of return have positive and significant effect on stock value, that internal rate of return have negative and significant effect on stock value, that net present value have negative and significant effect on stock value, that payback period have negative but no significant effect on market value while profitability index have positive and significant effect on stock value of the quoted small and medium scale enterprises. The model coefficient found that the investment appraisal techniques 41.6 percent movement on stock value of the quoted small and medium scale enterprises firms within the period covered in this study from the pooled effect model. The regression coefficient which is the coefficient of the independent variables to the dependent variable found that accounting rate of return have positive and significant effect on stock value, that internal rate of return have negative and significant effect on stock value, that net present value have negative and significant effect on stock value, that payback period have negative but no significant effect on market value while profitability index have positive and significant effect on stock value of the quoted small and medium scale enterprises. The finding confirms the a-priori expectations of the study and justifies the application of the accounting rate of return in appraisal methods. The finding also confirm the findings Imegi and Anamakiri (2014) that investment decisions and environmental factors really influence corporate performance; manufacturing companies in Nigeria adopt the same (uniform) investment criteria in assessing their investment; analytical tools used by manufacturing companies do not affect and influence their corporate performances, ownership structure induces the manner in which decisions are taken in any organization; non discounted techniques should not be used alone in calculating investment decisions and discounting techniques can be used but one method only will not give a faithful result. Kipesha (2019) that most of SMEs do not use the DCF methods; rather they select investments basing on their personal perception, market trends and external attractiveness of the investment and the findings of Kaijage and Elly (2014) that size and growth positively influence, in a significant way, the capital structure.

Conclusion

This study examined the effect of investment appraisal methods and equity value of quoted small and medium scale enterprises in Nigeria using cross sectional data sourced from the financial statements of the quoted firms. The model coefficient found that the investment appraisal techniques 41.6 percent movement on stock value of the quoted small and medium scale enterprises firms within the period covered in this study from the pooled effect model. The regression coefficient which is the coefficient of the independent variables to the dependent variable found that accounting rate of return have positive and significant effect on stock value, that internal rate of return have negative and significant effect on stock value, that net present value have negative and significant effect on stock value, that payback period have negative but no significant effect on market value while profitability index have positive and significant effect on stock value of the quoted small and medium scale enterprises.

Recommendations

i. Traditional appraisal techniques are a powerful way of appraising investment projects.

There is a need though for all decision makers, when evaluating projects, to clearly understand of the pitfalls arising from the use of traditional appraisal techniques. The problems of traditional appraisals are not the techniques themselves. Instead, decision makers should recognize the techniques' limitations and be careful to make sure that the appraisal techniques are performed properly

ii. Management of the quoted small and medium scale enterprises should study investment evaluation techniques, their advantages and disadvantages in relation to their stock valuation. Knowing these factors of influence will enable SMEs to make better investment decisions by selecting the right investment evaluation technique.

iii. Quoted small and medium scale enterprises should consider some components of Internal Rate of Return such records on yearly projected returns and wear and tear, however, they fail to consider rate of return from the business and the NPV to be equal to zero when making an investment decision. Therefore, Internal Rate of Return plays a divided role in enhancing SMEs' stock valuation.

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