Appraisal Techniques and Socio-Economic Factors in Real Assets Investment: Critical Study of Micro, Small and Medium Scale Enterprises in Nigeria

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Abstract

There is no doubt about the strategic importance of micro, small and medium enterprises (MSMEs) in developing and developed economies. As a result, governments and transnational institutions have been unrelenting in pursuing policies and programmes meant to engender MSMEs effectiveness and sustainability. However, despite the efforts of both governments and the agencies, the actualization of the strategic roles of MSMEs remains a source of controversial narratives. Unfortunately, however, while so much attention is given to such factors as finance and infrastructure, the issue of managerial competence seems to receive very little attention. This study focused on the decision-making orientations of MSMEs in Nigeria, particularly regarding adopting capital appraisal techniques. Specifically, the study investigated the extent of MSMEs' usage of investment appraisal techniques. In addition, the study identified the socio-economic factors that influence investment in real physical assets and the nature of the relationship between the adoption of investment appraisal techniques and the quality of decision-making. Based on a descriptive survey of 2740 MSMEs from the Federal Capital and twenty-three States spread across the six geo-political zones of Nigeria, the hypotheses were tested with multinomial and ordinal logistic regression. The findings of the study include: some investment appraisal techniques are used, albeit infrequently by some MSMEs; socio-economic factors such as taxation, inflation, high foreign exchange, economic growth, high interest rate, urban development, infrastructural development, and insecurity influence the decisions of MSMEs to invest in real physical asset. However, the increase in tax, infrastructural development and insecurity exerted more significant influence than the other factors across the groups of MSMEs; there is a significant and positive relationship between the use of investment appraisal techniques such as payback period, accounting rate of return and profitability index and the quality of investment decisions made by MSMEs. The study concludes that the embrace of rational decision-making methods by MSMEs in Nigeria is low. There is, therefore, the need to improve the attention given to the development of managerial competence of MSMEs.

Key Words: Investment appraisal technique, socio-economic factors, MSMEs, rational methods of decision-making,

1.0 INTRODUCTION

Micro, small, and medium-scale enterprises (MSMEs) form many businesses in both developing and developed economies. They do not only make up a greater percentage of businesses in the private sector of any modern economy but contribute significantly to economic growth through employment generation, growth in aggregate output, poverty reduction, income distribution and wealth creation. MSMEs equally constitute the critical force for the actualization of the endogenous development of a country. Relative to large firms, MSMEs are more flexible, innovative, and entrepreneurial and constitute the vehicle by which society's lowest-income earners can access economic opportunities. Their innovative nature is particularly inspiring at a time when the distribution of income and wealth

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in Nigeria is amongst the most unequal in the world. According to the World Bank (2022), MSMEs represent about 90% of businesses and more than 50% of employment worldwide, and formal SMEs contribute up to 40% of national income (GDP) in emerging economies. In a survey carried out by PriceWaterhouse in June, 2020, MSMEs accounted for 96% of the total number of businesses in Nigeria and contributed about 50% to the national GDP (PwC's MSME Survey, 2020). Equally, MSMEs accounted for 96.7% of businesses, 87.9% of employment and 45.7% of national GDP in the year 2020 (SMEDAN, 2021).

Both in numbers and economic role, MSMEs are recognized as the predominant form of businesses and employment and key actors for promoting more inclusive and sustainable growth, increasing economic resilience and improving social cohesion (OECD, 2021). Even Nigeria's extant National Policy on MSMEs (2021-2025) clearly acknowledges the significance of MSMEs as drivers of economic growth in the improvement of national productivity and competitiveness. Despite their strategic importance, large numbers and the attendant heterogeneity, stakeholder dissatisfaction with the performance of MSMEs remains palpable. MSMEs are weak and have very little influence on other economic actors. Even more worrisome is the fact that controversial narratives always characterize them. One of such controversies is the lack of agreement among scholars, agencies and countries in the adoption of the criteria for defining them. For instance, such parameters as asset base, sales turnover, paid-up capital, employment, technological base and location are frequently used. However, Nigeria's current National Policy on MSMEs (2021- 2025) adopted the twin criteria of employment and business turnover.

The other controversy dwells on their environment and potential. For instance, it is recognized that governments and multi-lateral organizations have shown commitment to cultivating and strengthening the key elements of the MSME ecosystem. Based on OECD (2018) framework, the MSMEs environment comprises four key elements - institutional/regulatory framework, access to markets, access to resources and entrepreneurial culture. These elements have constituent items that interact in a dynamic fashion in creating an enabling environment that

influences MSMEs in their day-to-day operations. Consequently, for MSMEs to effectively fill their roles in the economic development of a nation they require a balanced, effective and sustainable environment.

Unfortunately, realizing such an environment remains a mirage in developing countries (Ogbulu, 1999), where selective reform implementation is the order of the day.

But a key area of focus in this study is the entrepreneurial culture and specifically the element of abilities which focuses on the entrepreneur or owner manager and his managerial competencies particularly concerning decision making. There is no doubt about the importance of decision-making competencies to managerial cum organizational success. This situation informed the choice of the focus of this study - the use of appraisal techniques in decision-making, which relates to managerial competence (entrepreneurial culture) - an aspect of the MSME environment that is often taken for granted or, at best, generally given less attention than the other elements.

Ordinarily, there are two major methods of decision-making - rational and non-rational. While the rational approaches, as embodied in decision theory, are factual, logical, objective, and reliable, the non-rational approach, as pioneered by the intuitionists, is qualitative, non-factual, subjective, non-logical, and unreliable, and examples include experience, gut feeling, intuition and hunch. Though the two approaches have their merits and demerits, it is generally recognized that the rational approach, which includes capital budgeting and other quantitative methods, is more effective, particularly in the face of the increasing complexity of the business environment. Ironically, the more complex the environment, the greater the tendency of owners and managers of MSMEs to resort to non-rational approaches, which they consider as time-saving and pragmatic.

Appraisal techniques, otherwise called capital budgeting, entail objectively analyzing and evaluating the cost-benefits of investing in a project to decide whether resources should be allocated to the project. Investment appraisal techniques are decisive in boosting corporate performance as they involve evaluating and selecting long-term investments consistent with the firm's goal of wealth maximization (Kengatharan & Diluxshan, 2017). In fact, Farragher et al. (1999) note that more accurate and reliable capital budgeting is needed by smaller firms if they are to grow, remain competitive, and optimize the value of the firm. In addition, financial management theory advocates that using a sophisticated capital budgeting system enhances firms' performance. On the other hand, wrong investment decisions have dire consequences for the survival of any business. Studies have shown that one of the critical factors accounting for the high rate of business mortality in Nigeria and Africa is the non-adherence to sound investment decisions (Ogbulu, 1999). Effective investment decision-making is fundamental to corporate survival and the long-term success of any enterprise. It is, therefore, imperative for MSMEs to not only be familiar with sound investment appraisal techniques but also to make conscious efforts to religiously apply them whenever the need to decide on investment in real assets in their organizations arises.

Effective managerial competence and knowledge are needed to adopt appraisal techniques and understand and effectively arrest environmental trends and developments. The manager should be able to track the influence of such socio-economic factors as inflation, taxation, exchange rate, interest rate, infrastructural development, insecurity and urban development exert on a firm's capital investment decisions. Capital budgeting techniques are, without doubt, crucial in

arriving at sound investment decisions in any economy. Surprisingly, this is as far as theory goes. In practice, a wide gap exists between theory and practice. This is yet another source of controversy that focuses on whether MSMEs engage in formal risk analysis through the adoption of investment appraisal techniques in decisions on investing in real physical assets.

For example, Ayodele (2010), as well as Kerubo *et al.* (2016) found in their study that small-scale firms employ investment appraisal techniques, while others like Olawale *et al.* (2010) and Klammer (1972) hold that small manufacturing firms do not use sophisticated investment appraisal techniques when evaluating projects. Whether operators of MSMEs apply these project appraisal techniques and to what extent they use them in evaluating projects in Nigeria is still controversial among researchers and practitioners. Equally of interest in this study are two basic concerns about the relationship between the adoption of investment appraisal techniques and the quality of decisions of MSMEs and the socio-economic factors that influence operators of MSMEs to invest in real physical assets. These posers translate to three key objectives of the study, the actualization of which justifies the study.

2.0 AIMS OF THE STUDY: The foregoing underscores the imperativeness of this study as it seeks to close the gap between theory and practice in capital budgeting and unravel the factors that motivate MSMEs to invest in real physical assets in Nigeria. Though there are many capital appraisal techniques, the study focused on the Payback period (PBP), Net present value (NPV), Internal rate of return (IRR), Accounting rate of return (ARR), and Profitability index (PI). Based on this premise, the study was guided by the following hypotheses:
1. Operators of MSMEs do not always adopt formal risk analysis of investments based on capital appraisal techniques.
2. There is no significant relationship between the adoption of appraisal techniques and the quality of decisions made by operators of MSMEs.
3. Socio-economic factors do not influence MSMEs investment in real physical assets to a large extent.

3.0 REVIEW OF RELATED LITERATURE
Investment in real physical assets refers to the commitment of long-term funds to the acquisition of real physical assets like land, buildings, plant and machinery, furniture and fittings, vehicles and vehicular equipment that are combined with other factors of production to produce a given level of output. Like all investments, the commitment of funds is done by the investor in anticipation of future benefits (profit) which for many reasons, may or may not materialize as expected or desired by the investor. Nevertheless, Jifar (2020) has observed that the investment field is gradually expanding beyond trading of physical investment assets into electronic and human networking which risks are very difficult to predict hence the need to explore more sophisticated risk management models. In any case, given the element of risk inherent in all investments, it becomes imperative for any investor to undertake proper and objective appraisal of the costs and benefits of any investment opportunity before committing funds to such an investment.

Appraisal techniques, therefore, refer to those techniques, procedures, processes, skills, approaches, and theories developed over time to aid in the scientific and objective evaluation and identification of the feasibility and viability of investment opportunities in

the economy. Peterson and Fabozzi (2002), described capital budgeting as the process of analyzing investment opportunities in long-term assets which are expected to produce benefits for more than one year. On their part, Brigham and Ehrdardt (2011) defined capital budgeting as the whole process of analyzing projects and deciding whether they should be included in the capital budget. Brealey and Myers (2003) have argued that when these assumptions are met firms can separate investment and financing decisions and should invest in all positive net present value projects. Unfortunately, however, it has been observed that some of these assumptions rarely apply to small and micro businesses (Keasey & Watson (1993).

As a systematic process, capital budgeting involves several techniques and approaches, which are grouped into discounting, non-discounting, traditional, sophisticated, and unsophisticated. The most popular distinction is between discounting and non-discounting techniques, and this is based on whether such techniques take into consideration the time value of money in the analysis or not.

Over time, some of these techniques have undergone some mutations to yield improved versions and hybrids, such as the Modified Internal Rate of Return (MIRR) and the Discounted Payback Period. The discounted payback period is usually seen as a hybrid between discounting and non-discounting techniques, which combine the attributes of both techniques (Okafor, 1983). Beyond the issue of discounting, the techniques also vary in terms of their effect on the maximization of the owner's wealth. Adopting appraisal techniques can be very challenging, not just due to the mental pressures on the manager but also because they do not represent foolproof solutions.

3.1 MSMES in Focus: The OECD (2018) notes that SMEs are a dynamic and evolving population that is very diverse in age, size, business model, performance, and the profile and aspirations of entrepreneurs. It is equally noted that a better understanding of the heterogeneity of the SME population is critical for countries, regions, and cities to support the right business conditions and capitalize on their many diverse small businesses (OECD 2019). Classifying business organizations as micro, small, medium, or large organizations can be herculean, given the definitional controversy. Nevertheless, some attempts have been made by some multilateral organizations (ILO, OECD and World bank) and national bodies to streamline the definitional challenge. Taking the various views into account, the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN, 2000) has in line with dual criteria of employment and assets provided in the National Policy on MSMEs defined Micro, Small and Medium Enterprises (MSMEs) as follows:

- Micro Enterprise refers to any enterprise employing between one to nine people and having a capital base from one naira to ₦5 million excluding cost of land.
- Small Enterprises are firms that employ between 10 and 49 employees and having a capital base from ₦5 million to ₦50 million.
- Medium Enterprise is any enterprise that employs from 50 to 199 employees and having a capital base from ₦50 million to ₦500 million.

Perhaps it is necessary to point out that the Policy recognizes that where there is a conflict in the classification criteria, employment should take precedence. This is in recognition of the instability of the asset criterion which is often affected by inflationary pressures. For this study, the researchers have decided to adopt the classification given by SMEDAN.

3.2   **Environment of MSMEs -** UNIDO (2017) defined business environment as the set of conditions outside a firm's control that have a significant influence on how businesses behave throughout their life cycle. Every business, size notwithstanding, operates in an environment that embodies both macroeconomic and microeconomic variables which determine the firm's chances of survival. In this direction, the concern of policy makers and scholars is not just any environment but an enabling and conducive environment that is germane to the sustainable development of a firm. The significance of the word 'enabling' is seen in the development of benchmarks and tools for measuring how conducive a given business environment is. Such tools include the World Bank's Business Enabling Environment (BEE) and ILO's Enabling Environment for Sustainable Enterprises (EESE). However, this study adopted the OECD's environment for MSMEs which is shown in figure 1. As shown in the figure, the MSME environment is made up of four key components, viz - institutional and regulatory framework, access to markets, entrepreneurial culture and access to resources. The institutional/regulatory framework is made up of taxation, regulation, competition, court and legal issues and public governance.

The second component, access to markets focuses on - domestic demand conditions, trade and investment policies, public procurement and infrastructure. The third component, entrepreneurial culture, has the following elements - opportunities, abilities and attitudes. Lastly the fourth component, access to resources, focuses on finance, energy, knowledge, technology & innovation, human capital and skills development. These elements interact in a dynamic fashion to engender a business-enabling environment that varies from locality to locality. In specific terms, socio-economic factors relate to the totality of economic and social conditions or factors that influence or shape the decision of an individual or group to behave in a particular manner when confronted with a choice situation. Thus, for MSMEs the decision to actualize an investment opportunity is usually influenced not only by financial factors but also by some identifiable socio-economic factors like inflation trends, taxation, state of the country's infrastructure or public capital, state of urban development, foreign exchange dynamics, political stability, population trends, insecurity, etc. Though non-financial in nature, the impact of these socio-economic factors on the decision to invest may in fact be so significant as to lead to the rejection of an otherwise viable investment opportunity.

Furthermore, Klammer (1972) has observed that the mere adoption of various analytical tools is not sufficient to bring about superior performance given that other factors such as marketing, product development, executive recruitment and training, labor relations, etc., may have a greater impact on profitability.
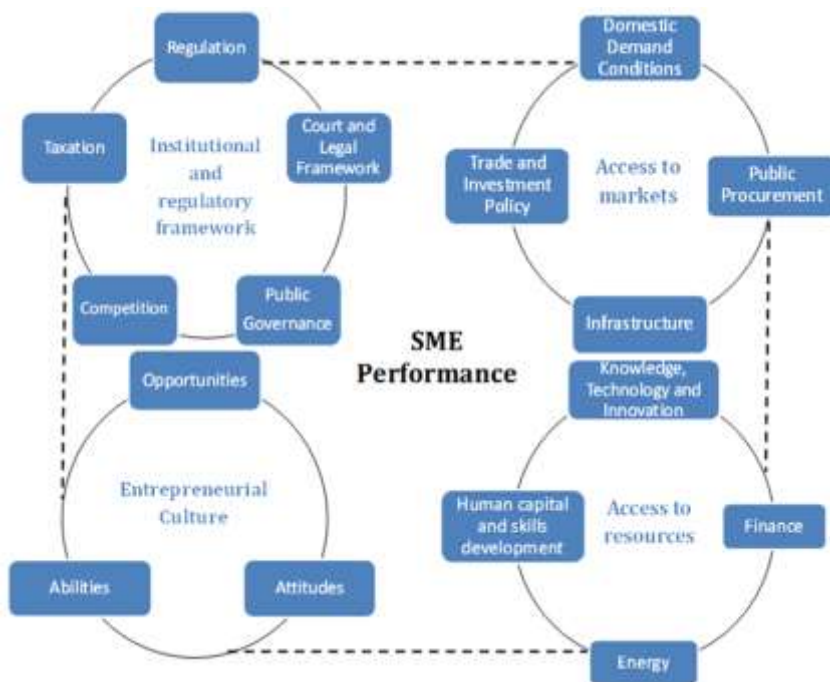
Fig 1: Environment of MSMEs
Source: OECD (2018). *Strengthening SMEs and entrepreneurship for productivity and inclusive growth: 2018 SME Ministerial Conference.* Accessed from www.oe.cd/smes on 27 August, 2022

3.3   Empirical Review

 A brief review of the studies undertaken in different parts of the world to establish whether MSMEs employ sound appraisal techniques before investing in real physical assets and the extent the techniques impact their growth and performance follows. Ayodele (2010) examined how far SMEs in Nigeria use analytical techniques in project appraisal and the effect of such practice on firms' investment performance. The findings of the study indicated that firms in Nigeria adopt the use of analytical appraisal techniques and that the use of a payback period is more popular than others. Olawale et al (2010) investigated the impact of investment appraisal techniques on the profitability of small manufacturing firms in the Nelson Mandela Bay area of the Eastern Cape Province, South Africa. The study used survey data from 124 small manufacturing firms in the Despatch, Uitenhage and Port Elizabeth areas of the Nelson Mandela Bay to analyse their capital budgeting practices. The researchers ascertained that small manufacturing firms' owners do not use sophisticated investment appraisal techniques when evaluating their proposed projects. Findings using multiple regression analysis confirmed the significant impact of investment appraisal techniques on the profitability of the small manufacturing firms. Hence the researchers concluded that the use of non-sophisticated investment appraisal techniques have a negative impact on the profitability of small firms.

Gupta and Jain's (2016) study focused on capital budgeting practices in SMEs in Haryana, India. The study sought to find out   whether SMEs used capital budgeting techniques for their long-term capital investment decisions. The researchers used simple percentage in testing the

research proposition. The study's major finding was that only a small percentage (12.5%) of firms use capital budgets for long-term decisions.

Barjaktarović *et al* (2015) investigated the capital budgeting techniques implemented by small and medium-sized enterprises in Serbia. Based on survey design involving 30 MSMEs and test of hypotheses based on simple percentages, the study discovered that the payback period was the dominant technique used by the firms and utilized the historical returns on investment in determining the cost of capital.

Mogwambo et al (2015) examined the contribution of investment appraisal techniques to efficient portfolio selection in the soft drinks industry in Kenya. The research method adopted for the study was survey design with a target population of 250 respondents selected by census technique. Findings of the study indicate a strong correlation between investment appraisal techniques and investment alternatives with investment appraisal accounting for 86% of selected investments alternatives.

In another study, Kerubo *et al* (2016) investigated the influence of investment appraisal techniques on financial performance of small manufacturing firms in Kisii town, Kenya. The researchers employed the survey research methodology with a sample size of 136 respondents. Based on descriptive statistics, the study revealed that small manufacturing firms largely rely on non-discounting investment appraisal methods to assess their investments in the industry which in turn affected their performance. In addition, investment appraisal techniques had a positive relationship with financial performance of small manufacturing firms.

The study by Kengatharan and Diluxshan (2017) examined the relationship between use of capital investment appraisal practices and effectiveness of investment decisions of listed manufacturing companies in Sri Lanka. The study employed a field survey from January to March 2017 and primary data were collected through self-administered questionnaire from randomly selected 20 listed manufacturing companies. Results of the study revealed that the use of NPV and IRR have significant and positive relationship with effectiveness of investment decision while DPB has significant but negative relationship with effectiveness of investment decision of listed manufacturing companies in Sri Lanka. However, risk analysis techniques were not significantly related to effectiveness of investment decisions.

Sungun (2015) investigated capital investment decisions in small and medium sized enterprises in Turkey. The study which focused on how capital investment decisions were made in SMEs in Turkey was based on descriptive survey of 65 medium and small-scale enterprises. Data were obtained through interview and questionnaire. Based on simple percentages, the researcher discovered that majority of the MSEs were aware of investment appraisal techniques but only a small fraction used the techniques. In addition, while payback period was the dominant technique Excel was the dominant software used by the firms.

In his study Jifar (2020) examined the investment appraisal techniques adopted by small and medium enterprises in Ethiopia. The researcher employed the descriptive survey research design with a sample size of 305 SMEs. Quantitative data so generated were analyzed using descriptive statistics. The study's findings revealed that SMEs operators need to continuously analyze the investment decisions that make them improve their financial performance.

Wambua and Koori (2018) investigated the effects of investment appraisal techniques and financial performance among small and medium enterprises in Nairobi County, Kenya. The specific objectives were to determine the effect of Accounting Rate of Return, payback period, Net Present Value and Internal Rate of Return on financial performance of small and medium enterprises. The researchers employed the descriptive survey research design with on a sample size of 384 Small and Medium Enterprises. The method of analysis adopted by the authors was the descriptive and inferential statistics and the findings show that the ARR, PBP, NPV and IRR significantly affect financial performance among the sampled SMEs. The results further revealed that PBP was the most dominant predictor of financial performance.

In another study, Onuorah (2019) examined the extent to which capital budgeting techniques affected the performance of manufacturing firms in Nigeria. The researcher adopted the cross-sectional research design using a mixture of primary and secondary data and focused on 76 firms. The performance measures were analyzed for seven years (2011-2017). The analysis results indicate that changes in the existing risk of a firm, utilizing suitable capital budgeting methods and firm size, will go a long way in positively affecting the specified performance measure. Imegi and Nwokoye (2015) examined the effectiveness of capital budgeting techniques in evaluating projects' profitability in Nigeria. The researchers focused on 65 quoted companies and adopted the chi-square statistical test in analyzing the data generated. The findings of the study revealed that the various capital budgeting techniques used in evaluating the profitability of a project are PBP, ARR, NPV, IRR, PI, and the NTV; the most effective capital budgeting technique for evaluating the profitability of risk-free projects is the net present value and taxation has no significant effect on project evaluation.

In their study Ndanyenbah and Zakaria (2019) investigated the application of the basic investment appraisal techniques by SMEs in the Tamale Metropolis. Simple random sampling technique was employed by the researchers to collect data from a sample of 400 SME operators with the use of a structured questionnaire. Based on multinomial regression analysis and Chi-Square test the research findings indicated that SME operators in the Tamale Metropolis had significant knowledge of the various investment appraisal techniques as well as a significant application level of the investment appraisal techniques. Findings also reveal that although the SMEs demonstrated considerable knowledge and application level of the investment appraisal techniques, they did not employ the theoretical mathematical formulae of the investment appraisal techniques in appraising their investments.

4.0   METHODOLOGY

Given the nature of the phenomenon of interest, the study utilized descriptive and cross-sectional survey research designs. While the descriptive framework provided answers to the questions of who, how, what, when, and where of the research problem, the cross-sectional survey design provided a snapshot of the outcome and the characteristics associated with it for a large number of respondents (Bethlehem, 1999, and Kombo & Tromp, 2006).

 4.1 Population and Sample Size Determination: The study utilized both primary and secondary data and primary data were sourced through a self-reporting questionnaire which ensured a rich insight into the respondents' experiences. The questionnaire had both structured and open-ended questions that elicited individual opinions. The structured questions were in Likert format and ranged from 3-point to 5-point scales. The questionnaire was administered

to the firms' operators (owners and managers). The study focused on 3935 MSMEs drawn from Abuja and major cities of the twenty-three States spread across the country's six geopolitical zones. However, the study's target population and the sample size were first determined State by State and later aggregated. Taken into account the fact that MSMEs consist of both formal and informal components, the determination of the target population involved multi-stage procedures. While the directories/records of State Chambers of Commerce, National Association of Small-Scale Industrialists (NASSI), Ministries of Small-scale Enterprises and Ministries of Commerce and Industry were used in generating the population of small and medium-scale enterprises, due to their informal nature, it was difficult finding a reliable and authentic register of micro enterprises. As a result, the population of micro enterprises was treated as infinite.

Consequently, in calculating the sample sizes, we utilized the Krejcie & Morgan sample size table to determine the sample size of small and medium-sized enterprises, and Cochran's formula for the infinite population was utilized in arriving at the sample size of micro-enterprises. Based on the Agency records purged to remove moribund firms, the target population of small and medium enterprises was 76300 firms. Based on Krejcie and Morgan table, an aggregate sample size of 2134 was derived. On the other hand, based on Cochran's formula for infinite population, the sample size of micro-enterprises for the zones was 1801. The sampling technique was equally multi-stage, involving stratification and convenience. While stratified and random sampling was used for small and medium-sized firms, selecting micro firms was based on convenience.

4.2 Reliability and Validity of Survey Instrument

A pilot study was conducted in Abia and Lagos States, major commercial hubs in the south-East and southwest zones of the country. This was necessary to determine the reliability and validity of the research instrument. The split-half technique was employed to test for reliability, and the output is shown in Table 2. The values of both Spearman-Brown and Guttman coefficients are high and within the acceptable range of reliability measure. In terms of validity, the entire process of preparing and constructing the questionnaire was subjected to multiple levels of evaluation, beginning from the team members' individual and collective assessment to expert evaluation by lecturers in the Department of Measurement & Evaluation (Faculty of Education) to achieve both content and face validity. In addition, construct validity was determined based on past research works and extant theory. This aligns with Moser and Kalton's (1997:356) observation that the essence of construct validity is its dependence on theory; examining the observed associations is as much a test of the theory as of the scale's validity. Another factor that strengthened the instrument's validity is that the topic variables have general applicability, and some of the variables of interest have been investigated in the past.

Table 2: Reliability coefficients based on Split-half method

S/No.	VARIABLES	No. of Items	Spearman-Brown coefficient		Guttman Split-half coefficient
			Equal length	Unequal Length	
1	Extent of usage	5	.894	.897	.862
3	Socio-economic factors	8	.903	.903	.902
4	Quality of investment Decision and profitability	2	.930	.930	.930

Source: Authors' Computation.

4.3   Data Analysis Technique

The data analysis techniques employed in this research included descriptive statistics, frequency distribution, graphs, weighted average index, and charts. In addition, regression (ordinal and multinomial), and Kruskal-Wallis tests were used to test the hypotheses on the SPSS software package. Ordinarily, logistic regression is used to model a categorical dependent variable as a function of one or more independent variables. Ordinal logistic regression (OLR) is a type of logistic regression analysis where the response variable has more than two categories. We adopted the proportional odds model, which is the most widely used logistic regression method. The ordinal logistic model is represented thus:

$$ln\left(\theta_j\right) = \alpha_j \; - \beta_1 \, X_1 \; + \; \beta_2 X_2 \; + \ldots \ldots + \beta_9 \; X_9$$

Where j goes from 1 to the number of categories minus 1.
$\beta_1, \ldots, \beta_9$ are the regression coefficients, $X_1, \ldots, X_9$ are the predictor variables.
Ordinal logistic regression model is estimated using maximum likelihood. On the other hand, the Generalized Linear Model (GLM) is represented thus:

$$Link(\gamma_j) = \frac{\theta_j - [\beta_1 X_1 + \beta_2 X_2 + \cdots . + \beta_k X_k]}{\exp(\tau_1 Z_1 + \tau_2 Z_2 + \cdots + \tau_m Z_m)}$$

Where, Y_j is the cumulative probability for the category, j^{th}, θ_j is the threshold for the jth category, $\beta_1, \ldots, \beta_k$ are the regression coefficients, $X_1, \ldots, X_k$ are the predictor variables, and k is the number of predictors.

5.0   RESULTS

A total of three thousand, nine hundred and thirty-five copies of the questionnaire were distributed out of which two thousand, seven hundred and forty representing 70% were returned from twenty-two states and Abuja, the Federal capital. Fig 2 shows the
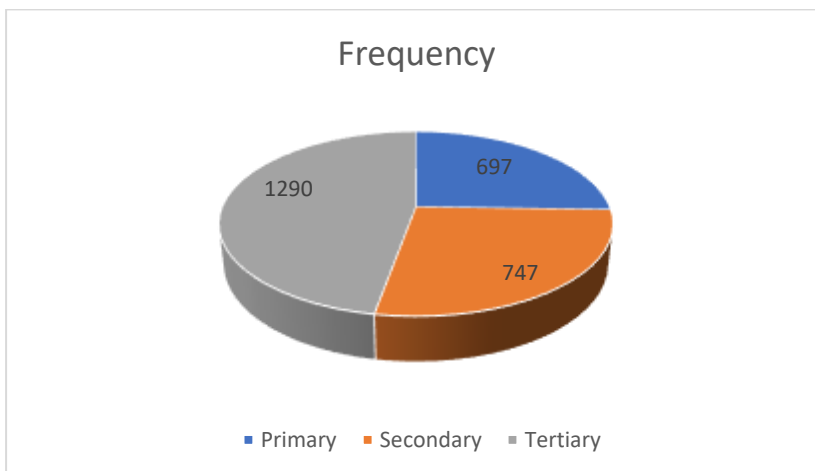
Fig 2: Classification of firms
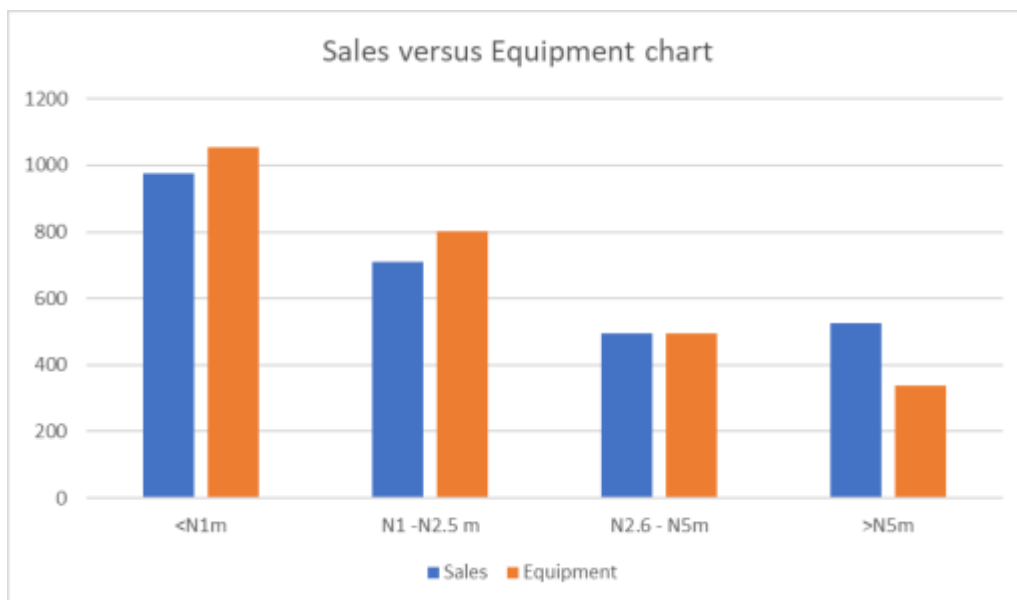*Source: Fieldwork 2021*

classification of the firms into three groups: primary (extractive and farming), secondary (manufacturing and fabricating), and tertiary (service). The figure shows that 697, or 25.4%, of the firms belong to the primary sector. On the other hand, 747 firms (27.3%) and 1290 firms (47.1%) belong to the secondary and service sectors of the economy, respectively.

Figure 3 is a pie chart that shows the distribution of the highest educational qualifications of the CEOs of the firms. The figure shows that a majority (1340 or 48.9%) of the CEOs are holders of degrees and HND. This is followed by WASC holders (1004 or 36.8%); M.Sc holders (323 or 11.8%) and Ph.D holders (61 or 2.2%). Fig. 4 on p.12 shows the firms' sales turnover distribution. Based on a four-level categorization, 524 firms (19.1%) had the highest sales turnover of above ₦5 million. This group is followed by 496 (18.1%) firms with a sales turnover of between ₦2.6 and ₦5 million. While those with sales turnover of between ₦1m and ₦2.5 million were 711 (or 25.9%), firms with sales turnover of less than ₦1 million were 975, representing 35.6% of the sample. Fig. 3 on page 11 equally shows the distribution of the total expenditure on equipment in 2019 by the firms. Firms with a total expenditure on equipment of between ₦1 million and ₦2.5 million were 803 or 29.3% of the firms. On the Conversely, 1053 firms (38.4%) spent less than ₦1 million naira on equipment.
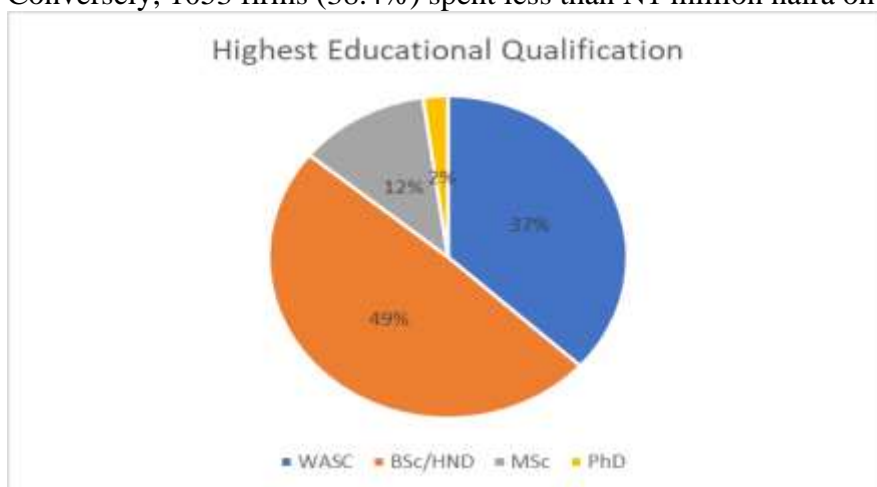
Fig 3: Pie Chart of highest educational qualification of respondents
Source: Field work 2021.

While 337 or 12.3% of the firms spent above ₦5 million naira, 496, (18.1%), spent between ₦2.6 million and ₦5 million naira on equipment in 2019.

Fig 4: Bar chart of sales and expenditure on equipment
Source: Field work 2021.
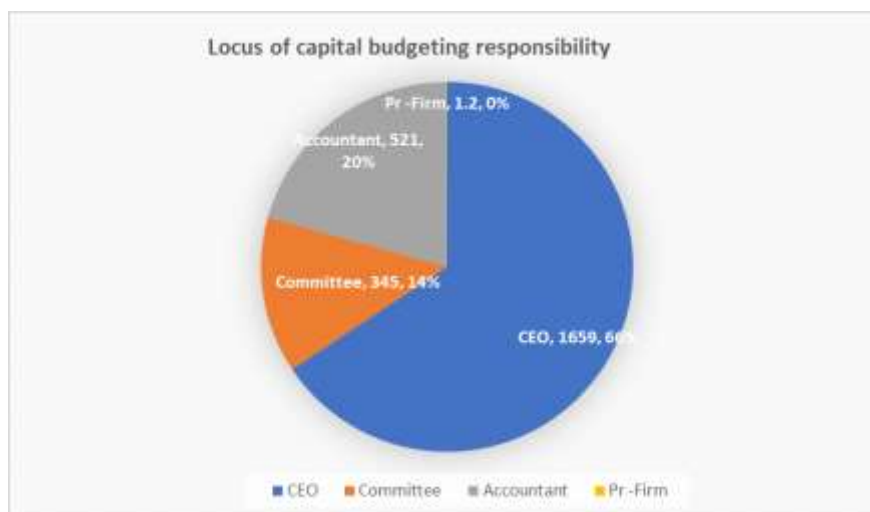
Fig 5: Pie chart of Locus of capital budgeting responsibility
Source: field work 2021

Fig. 5 shows the distribution of the locus of responsibility for preparing capital budgets. Out of four positions of responsibility, the chief executive officer (CEO) has the highest number of frequencies, 1659 (60.5%) of the firms. This is followed by the company accountant, which was used by 521 firms, or 19% of the firms; the company committee, which was used by 345

firms (or 12.6%); and the professional accounting firm, which was used by 167 firms, or 6.1% of the firms.

Table 3 shows the distribution of the extent of usage of capital investment techniques among the respondents. Focusing on the individual positive dimensions showed that 'sometimes' had the highest frequency across the techniques. The weighted mean value proved more realistic as it showed that the extent of usage is quite low, given that all the techniques had a mean value of less than 3.0 on a 5.0 maximum value. The mean values are payback period (2.58), internal rate of return (2.28), net present value (2.31), accounting rate of return (2.23) and profit index (2.32). The payback period technique has the highest extent of usage.

Table 3: Frequency distribution of the extent of usage of capital appraisal techniques

	Response	Frequencies						Mean
		Never	Rarely	Sometimes	Often	Always	Total	
A	Extent of usage of PBP	767	500	742	403	258	2670	2.58
B	Extent of usage of IRR	976	535	757	205	185	2658	2.28
C	Extent of usage of NPV	979	452	790	233	181	2635	2.31
D	Extent of usage of ARR	1052	488	740	184	183	2647	2.23
E	Extent of usage of PI	1022	451	726	228	228	2655	2.32
	Total	4796	2426	3755	1253	1035	13265	

Source: Fieldwork 2021

Fig 6 below shows the distribution of firms that engage in formal risk analysis and how frequently they do so. While 1953 firms, or 71.3%, engage in formal risk analysis, 924 of them, or 33.7%, do so always. On the other hand, 1029, or 37.6% of the firms do so sometimes. On the other hand, 776 firms, or 28.3 % of the sample, do not engage in formal risk analysis.
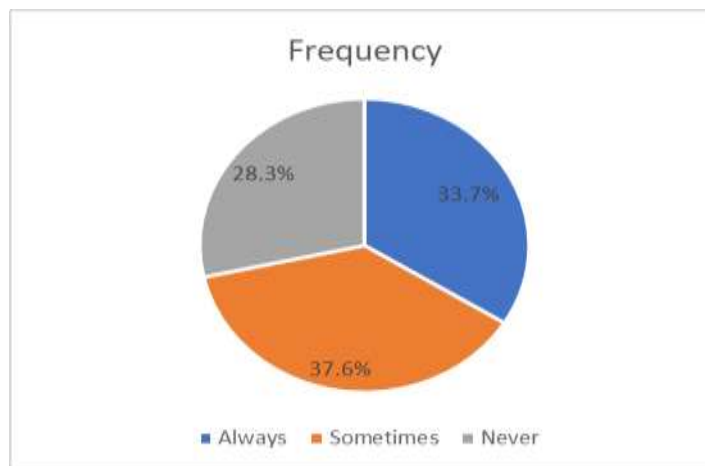
Fig 6: Pie chart of distribution of firms engaged in formal risk analysis

Source: Fieldwork 2021
5.1: HYPOTHESIS TESTING

Hypothesis 1: Operators of MSMEs do not always adopt formal risk analysis of
investments based on capital appraisal techniques.

The hypothesis focused on the frequency (in 3-degrees of always, sometimes and never) of engagement in formal risk analysis and the extent of usage of the appraisal techniques. The degree of usage was assessed with a 5-point Likert scale, which was reduced to three on the basis of which a multinomial regression analysis was used to determine the odds ratio of falling in any of the three degrees of never, sometimes and always. In order to identify the dominant technique, the hypothesis was further specified into five dimensions that focused on each of the five appraisal techniques. In addition, we carried out a Kruskal-Wallis's test to determine if differences exist among the three groups of firms – micro, small, and medium firms. The use of the Kruskal-Wallis test was informed by the fact that our dataset failed the normality assumption of ANOVA. The relevant hypotheses are stated thus:

Ho 1a: Operators of MSMEs do not always adopt formal risk analysis of investments based on the payback appraisal technique.

Ho 1b: Operators of MSMEs do not always adopt formal risk analysis of investments based on the internal rate of return appraisal technique.

Ho 1c: Operators of MSMEs do not always adopt formal risk analysis of investments based on the net present value appraisal technique.

Ho 1d: Operators of MSMEs do not always adopt formal risk analysis of investments based on the accounting rate of return appraisal technique.

Ho 1e: Operators of MSMEs do not always adopt formal risk analysis of investments based on the profitability index appraisal technique.

The five hypotheses were tested together with a multinomial regression model, and the outcomes are shown below.

A. MULTINOMIAL REGRESSION OUTPUTS

1. Model fitting information: The model fitting information in table 4 shows whether any of the coefficients are statistically significant. That is, whether the variables that were added statistically and significantly improved the general model compared to the intercept alone model. Given that the $p < .05$ (.000), we conclude that the full model significantly predicts the dependent variable better than the intercept-only model.

Table 4: Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	1964.690			
Final	939.459	1025.231	20	.000

2. Goodness of Fit: This was used to assess how well the model fits the data and this is done based on two chi-square statistics – Pearson and Deviance. Note that large chi-square values mean a poor fit for the model; similarly, statistically significant values mean the model does not fit the data well. It should be noted that the two chi-square goodness-of-fit statistics must not always give the same result. Based on the values in table 5, while the Pearson value (p-value = .112) shows that the model fits the data well, the Deviance value (p-value = .021) shows a poor fit between the model and the data.

Table 5 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	646.720	266	.112
Deviance	649.085	266	.021

3. Likelihood ratio test:
This test identifies which of the independent variables is statistically significant and Table 6 shows that all the techniques are significant.

Table 6 Likelihood Ratio Tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	939.459[a]	.000	0	.
PAY_BP	1011.519	72.061	4	.000
INTERNAL_RR	967.497	28.038	4	.000
NET_PV	967.766	28.308	4	.000
ACC_RR	971.049	31.590	4	.000
PROFI_TI	950.384	10.925	4	.027

4. Parameter Estimates:
This presents the coefficients of the model. The parameter estimates table shows that each dummy variable has coefficients for the different techniques. Though there are three categories of the dependent variables, the 'always' category was used as reference category and so only two logits (i.e logistic regression coefficients) are shown. The first row represents a comparison of the 'sometimes' category with the 'always' category and the second row is a comparison of the 'never' category to the 'always' category. The table shows that internal rate of return (IRR), Net present value (NPV) and profitability index are significant. The significant coefficients relate to:
*PAY_BP=1, B = 0.461, p = .021 was used as the dummy variable representing the comparison between always and sometimes of the payback period technique. It has a positive sign, which

means, the manager is likely to 'sometimes' carry out a formal risk analysis of investments through the use of appraisal techniques.

*INTERNAL_RR=2, B = .453, p = 0.010 was used as the dummy variable representing the comparison between 'always' and 'sometimes' usage of the payback period technique. It has a positive sign, which means the manager is likely to 'sometimes' carry out a formal risk analysis of investments through the use of appraisal techniques.

 *NETPV-1, B= .622, p = .013 was used as the dummy variable representing the comparison between always and sometimes using the Net Present Value technique. Its positive sign suggests that the manager is likely to sometimes carry out a formal risk analysis of investments.

 *PROFI_TI 2, B= .452, p = .003 was used as the dummy variable representing the comparison between always and sometimes using the profitability index technique. Its positive value means the manager is sometimes likely to conduct a formal investment risk analysis.

The coefficients in the 'never' row that are significant are:

PAY_BP-2, B = 1.029, p = .000) was used as the dummy variable that compares the always-used and never-used categories of payback techniques. The positive value means the manager will likely consider using the appraisal technique.

5. The Classification Table:

This table shows how well a model has predicted the categories or group membership based on the columns. Table 7 clearly shows that the 'sometimes' category is the dominant group, confirming that MSMEs use appraisal techniques sometimes rather than always.

Table 7: Classification

Observed	Predicted			
	Always	Sometimes	Never	Percent Correct
Always	416	423	81	45.2%
Sometimes	279	490	239	48.6%
Never	71	156	560	71.2%
Overall Percentage	28.2%	39.4%	32.4%	54.0%

The preceding outputs confirm that MSMEs sometimes use capital appraisal techniques. In addition, only some of the techniques are used. In view of the heterogeneity of the firm groups, we ran a Kruskal-Wallis test to identify if differences exist among the groups in the use of the specific techniques. The output is shown in Table 8 below.

Table 8: Test Statistics

	Extent of usage of paybp	Extent of usage of internalrr	Extent of usage of netpv	Extent of usage of accrr	Extent of usage of profiti
Chi-Square	73.210	64.335	42.426	26.654	32.780
Df	2	2	2	2	2
Asymp. Sig.	.000	.000	.000	.000	.000

The Kruskal-Wallis table above

a. Kruskal Wallis Test
b. Grouping Variable: Classification of firms based on value of asset

shows significant p-values for all the techniques. This means that medium, small, and micro business groups adopt investment appraisal techniques differently.

Hypothesis 2: Socio-economic factors do not influence MSMEs' investment in real physical assets in Nigeria to a large extent.

This hypothesis was tested with a generalized linear model. The relevant outputs are shown below.

Table 9: Goodness of Fit

	Value	df	Value/df
Deviance	4593.174	3757	1.223
Scaled Deviance	4593.174	3757	
Pearson Chi-Square	5650.036	3757	.504
Scaled Pearson Chi-Square	5650.036	3757	
Log Likelihood	-2470.435		
Akaike's Information Criterion (AIC)	5010.869		
Finite Sample Corrected AIC (AICC)	5011.854		
Bayesian Information Criterion (BIC)	5216.016		
Consistent AIC (CAIC)	5251.016		

Dependent Variable: AMOUNT OF MONEY SPENT ON EQUIPMENT
Model: (Threshold), INCRETAX, INFLATION, HIFRX, ECOGROW, HINTR, URBDEV, INFRADEV, INSECURITY

The values/df of Deviance and Pearson chi-square, as shown in the Goodness of Fit table 9, differ. While the Deviance value (1.223) is above 1.0, which is unacceptable, the Pearson value (.504) falls within the acceptable range and, therefore, confirms the appropriateness of the model.

The p-value of the Omnibus test Table 10, which is <0.05, confirms that the full model is good.

Table 10: Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
361.344	32	.000

Dependent Variable: Amount of money spent on equipment
model: (threshold), incretax, inflation, hifrx, ecogrow, hintr, urbdev, infradev, insecurity

Table 11: Tests of Model Effects

Source	Type III		
	Wald Chi-Square	df	Sig.
INCRETAX	39.422	4	.000
INFLATION	19.279	4	.001
HIFRX	12.874	4	.012
ECOGROW	39.322	4	.000
HINTR	3.972	4	.410
URBDEV	29.773	4	.000
INFRADEV	14.630	4	.006
INSECURITY	36.156	4	.000

Dependent Variable: amount of money spent on equipment.
model: (threshold), incretax, inflation, hifrx, ecogrow, hintr, urbdev, infradev, insecurity

\

The test of the model effects (Table 11) shows that only one factor, infrastructural development, is insignificant (p-value = .410).

The parameter estimates (Appendix A) identified the significant categories of the techniques. The significant categories are as follows:

*INCRETAX -2**, B = .853, p = .000)** was used as the dummy variable of the 'very low extent' of increase in tax. The positive estimate shows that it influences investment in real physical asset.

*INCRETAX-3, B = .608, p = .000) was used as the dummy variable of the 'low extent' category of increase in tax. The positive estimate shows that it influences investment in real physical asset.

*INFRADEV-3, B = .128, p =.041 was used as the dummy variable of the 'low extent' category of infrastructural development. The positive estimate shows that it influences investment in real physical asset.

*INSECURITY-2, B = .1719, p = .000 was used as the dummy variable for the 'very low extent' insecurity category. The positive estimate shows that it influences investment in real physical assets.

*INSECURITY-3, B = .1546, p = .000 was used as the dummy variable for the 'low-extent' category of insecurity. The positive estimate shows that it influences investment in real physical assets.

Both urban development and high foreign exchange have significant but negative estimates'
Though the test of the model effect table showed that seven of the eight factors are significant, only three factors, increase in tax, infrastructural development and insecurity, have positive and significant estimates but at very low and low extents.

Hypothesis 3: There is no significant relationship between the use of appraisal techniques and the quality of investment decisions by MSMEs in Nigeria.

This hypothesis was tested with ordinal regression and the results are shown below:

Table 12: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	4075.772			
Final	3836.462	239.311	20	.000

Link function: Logit.

 The Model fitting Information (table 12) shows a p-value of 0.00 which is <.05, which clearly shows that the final model is good.

Table 13: Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	3815.103	1616	.070
Deviance	3295.603	1616	.470

Link function: Logit.

In terms of goodness of fit, Table 13 shows that while the Pearson chi-square value is significant, which is not acceptable, the Deviance value confirms the appropriateness
 of the model.

Parameter estimates: The coefficients that are positive are as follows:

PAYBP-2, B = .475, p-value = 0.012 was used as the dummy variable representing the 'rarely used' category of the Payback period technique. The positive estimate shows that it has a likelihood to positively affect the quality of investment decision.

INTERNALRR-3, B = -.714, p-value = .007 was used as the dummy variable for 'sometimes used' category of internal rate of return. The negative estimate shows that it does not have the likelihood to affect the quality of investment decision.

ACCRR-2, B = 1.040, p-value = .000 was used as the dummy variable representing 'rarely used' category of accounting rate of return technique. The positive estimate shows that it has the likelihood to affect positively the quality of investment decision.

ACCRR-3, B = .752, p-value = .006 was used as the dummy variable representing 'sometimes used' category of accounting rate of return technique. The positive estimate shows that it has the likelihood of affecting the quality of investment decision positively.

ACCRR-4, B = 1.131, p-value = .000 was used as the dummy variable representing the 'often used' category of accounting rate of return technique. The positive estimate shows that it has the likelihood to affect the quality of investment decision positively.

PROFITI-2, B = 1.059, p = .000 was used as the dummy variable representing the 'rarely used' category of the profitability index technique. The positive estimate shows that it is likely to affect the quality of investment decision of the manager.

PROFITI-4, B = .776, p = .001 was used as the dummy variable representing the 'often used' category of profitability index technique. The positive estimate shows that it is likely to affect the quality of a firm's investment decisions.

Table 15: Test of Parallel Lines

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	3836.462			
General	1851.871[b]	1984.591[c]	60	.663

The insignificant p-value of the test of parallel lines assumption further confirms the model's suitability. The model clearly shows that only the payback period, accounting rate of return, and profitability index have a positive effect on the quality of investment decisions of MSMEs.

5.2: Discussion of Findings

Hypotheses 1a - e sought to test the extent to which MSMEs use appraisal techniques: payback period, internal rate of return, net present value, accounting rate of return, and profitability index. Each hypothesis focused on one technique. The statistical tests confirm that MSMEs use capital appraisal techniques, albeit infrequently. In addition, the groups of firms of medium, small and micro differ in their adoption of the techniques. This partly corroborates the findings of Jifar (2020), Ndanyenbah and Zakaria (2019) and Ayodele (2010) who discovered that operators of SMEs generally use appraisal techniques. However, not all the techniques were used. Managers of MSMEs exercise discretion in their choice and adoption of techniques based on the managers' experience and competence. Expectedly, such techniques as payback period, net present value and profitability index featured more than the others. This aspect of the findings equally corroborates with the findings of Ayodele (2010) to the effect that the payback period is a popular technique. Perhaps, it is necessary to point out that the infrequent use of the techniques is traceable to factors that relate to the techniques and the users. On the part of the users, level of education, experience, knowledge of the techniques, and change readiness in embracing the rational approach to decision-making may enhance or impede the adoption of the techniques. In addition, the availability of data, cost considerations, and reliability of the techniques are equally pertinent.

The second hypothesis confirmed that there is a significant and positive relationship between using investment appraisal techniques such as payback period, accounting rate of return and profitability index and the quality of investment decisions made by MSMEs. This finding corroborates the findings of Mogwambo et al (2015) and Kengatharan and Diluxshan (2017). There is no doubt that the central function of investment appraisal techniques, like other rational methods, is to guide managers to make sound investment decisions, which are the signpost of managerial performance and corporate success and survival. Appraisal techniques and other rational techniques engender effective decisions because they are factual, logical, and data-driven. As a result, the decision maker is in a position to assess not only the key ingredients of the decision but also to track the process.

The third hypothesis determined the extent to which socio-economic factors influence MSMEs investment in real physical assets. The study identified eight socio-economic factors that are considered important to the decision by managers of MSMEs to invest in real physical assets. These factors are increase in tax, inflation, high foreign exchange, economic grow, high interest rate, urban development, infrastructural development and insecurity. While there is no doubt about the possible influence of these factors on MSMEs' decision to invest in real physical asset as shown by the table of model effect, it is recognized that they are not equally influential: there are differences in degree, time and even region of influence. The result of the test showed that two factors, increase in tax and insecurity, were more critical to the decisions of MSMEs to invest in real physical asset.

There is no doubt about the significance of tax but that of insecurity raises great curiosity. However, in terms of the extent of the influence, it was discovered that the two factors have positive and significant estimates at very low and low extents. Given the significance of the influences of the two factors and taking cognizance of the differences among the elements of MSMEs, we further sought to determine if there were differences in the influence of the entire eight factors among MSMEs. Based on a Kruskal-Wallis test, we discovered that the firms differed in the other six factors except increase in tax and insecurity. This clearly shows that the influence of these two factors cut across the levels and strata of MSME firms.

6.0 POLICY IMPLICATIONS

It is clear from the preceding that MSMEs adhere half-heartedly to adopting appraisal techniques. This points to a lack of conviction or necessary zeal to embrace the rational approach to decision-making, which engenders more effective decisions. In this regard, the focus of government should be on developing the managerial capacities of MSMEs' operators and owners. In specific terms, the following policy measures would be useful in bringing about the needed reorientation of MSMEs' managers and owners.

1. Policy measures should give more attention to developing the managerial competencies and knowledge of owners and managers of MSMEs through the instrumentality of Business Development service providers. Efforts should be geared towards addressing the challenges MSMEs face in fully embracing rational methods of decision-making. Government should be able to stimulate the demand for business development services by MSMEs through matching supply with demand, providing incentives and defining the framework and guidelines for such relationships.

2. The government should provide an enabling environment for business linkages between big businesses such as MNCs and smaller enterprises. Such linkages, which may be based on R&D and resource acquisition, provide numerous benefits, such as exposure to national and global business trends and a repertoire of experiences and practices. Such exposures are very effective in cultivating change readiness and honing managerial capacities.

3. TETFUND should consider introducing an intervention for universities to regularly carry out business censuses of micro-businesses in their locality and provide free business development services to a given number of them through their business faculties. Such a programme will go a long way in bringing in micro firms into the formal net and increasing the knowledge base and business outlook of the firms. Such a programme can be reinforced by linking it to the NUC accreditation exercise.

CONCLUSION: There is no doubt that the findings of this study have confirmed that there is low level of adoption of appraisal techniques by operators of MSMEs. This is, in spite, of the abundant evidence of the positive impact of using appraisal techniques on the quality of investment decisions and corporate bottom line. This clearly points to the fact that operators of MSMEs must be facing very serious challenges in their desire to fully embrace rational methods of decision-making. No wonder the preference of the majority of the operators for simple and unsophisticated techniques. It is also evident from the findings that of all the socio-economic factors that influence the decision of MSMEs to invest in real physical assets, tax and insecurity exerted greater influence. Interestingly, insecurity exerted a curious influence in that while it encouraged investment in protective assets, it discouraged investment in productive assets.

REFERENCES

Ahmed, I. E. (2019**).** Factors determining the selection of capital budgeting techniques. *Journal of Finance and Investment Analysis, 2(2), 77-88.*

Ayodele, T. D. (2010), An assessment of risk analysis techniques and investment performance among Nigerian firms, *Journal of Business and Organizational Development,* 2(Dec), 74-81.

Bethlehem, J. (1999). Cross-sectional research. In H. J. Adèr and G. J. Mellenbergh (Eds). *Research Methodology in the Social, Behavioural and Life Sciences,* London: Sage, pp. 110-43.

Brealey, R. A. And Myers, S. C. (2007). Principles of corporate finance (International edition). McGraw-Hill.

Brien, M. O. (1997); Payback: A gulf between managerial accounting and financial theory in practice-A view from accountants and finance officers in Ireland; *The International Journal of Accounting*, 32(2), 173-186.

Brigham, E. F. and Ehrdardt, M. C. (2011). *Financial Management: Theory and Practice.* Cengage.

Cochran, W. G. (1977). *Sampling techniques.*3rd ed. New York: John Wiley.

Farragher, E., Kleiman, R. and Sahu, A. (2007), The association between the use of sophisticated capital budgeting practices and corporate performance. *The Engineering Economist* 46 (4): 300-311.

Gigerenzer, G., and Gaissmaier, W. (2011).Heuristic decision-making. *Annual Review of Psychology*, 62: 451–482.

Gupta, P. K. And Jain, V. 92016). Capital budgeting practices in SMEs: A study of selected enterprises of Haryana. *International Journal of Commerce and Management Research*, 2(2), 75-79.

Jifar, T. (2020). Investment appraisal techniques of small and medium-scale enterprises in Ethiopia (A case Study in Selected Wored as of Wolaita Zone). *International Journal of Research in Business Studies and Management,* 7(4), 14-24.

Huang, L. and Pearce, J. L. (2015**).** Managing the unknowable: The effectiveness of early stage investor gut feel in entrepreneurial investment decisions. *Administrative Science Quarterly*, 60 (4); 634–670.

Hartwig, F. (2011),.The use of investment appraisal methods and cost of capital estimation techniques in Swedish listed companies. *Paper presented at the 34th EAA Congress, Rome 20–22 April 2011.*

Imegi, J.C. & Nwokoye, G.A. (2015), The effectiveness of capital budgeting techniques in evaluating projects' profitability, *African Research Review,* 9(2), 166-188. http://dx.doi.org/10.4314/afrrev.v9i2.13

Keasey, K. and Watson, R. (1993). *Small firm management: Ownership, finance and performance.* Blackwell.

Kengatharan, L. & Diluxshan, C. P. (2017), Use of capital investment appraisal practices and effectiveness of investment decisions: A study on listed manufacturing companies in Sri Lanka, *Asian Journal of Finance & Accounting,* 9(2), 72-89.

Kerubo, N. H., Muturi, W. and Mogwambo, V. A. (2016). Influence of investment appraisal techniques on financial performance of small manufacturing firms in Kenya: A survey of the Jua-Kali sector in Kisii Town. *International Journal of Social Sciences*, 11 (viii), 791-800.

Khatri, N., and Ng. H. A. (2000). The role of intuition in strategic decision making. *Human Relations*, 53: 57–86.

Klammer, T. (1993). Improving investment decisions. *Management Accounting*, 75 (1), 35-39.

Klammer, T. (1972), Empirical evidence of the adoption of sophisticated capital budgeting techniques, *The Journal of Business*, University of Chicago Press, 45(3), 387-397. DOI: 10.1086/295467.

Kombo, D. K and Tromp, D. L. A (2006). *Proposal and Thesis Writing: An introduction.* Nairobi: Paulines Publications.

Krejcie, R.V., and Morgan, D.W. (1970) Determining Sample Size for Research Activities. *Educational and Psychological Measurement*.30, 607 –610.

Mogwambo, V. A., Mukras, M. S. and Oima, D. O. (2015). Influence of investment appraisal on efficient portfolio selection in the soft drink industry in Kenya. *European Journal of Business and Management, 7(8), 81-99.*

Moser, C. and Kalton, G. (1997). *Survey Methods in Social Investigation*. London: Routeldge.

Ndanyenbah, T.Y. and Zakaria, A. (2019), Application of investment appraisal techniques by small and medium enterprises (SMES) operators in the Tamale Metropolis, Ghana, *Journal of Economics and Sustainable Development,* 10(14), 6-43. DOI: 10.7176/jesd/10-14-02, Corpus ID: 201477218.

OECD (2018). Strengthening SMEs and entrepreneurship for productivity and inclusive growth: 2018 SME Ministerial Conference. Available at www.oe.cd/smes

OECD (2019). *OECD SME and Entrepreneurship Outlook 2019*. OECD   Publishing, Paris, https://doi.org/10.1787/34907e9c-en.

OECD (2021), SME and entrepreneurship policy frameworks across OECD countries: An OECD Strategy for SMEs and Entrepreneurship. *OECD SME and Entrepreneurship Papers, No. 29.* OECD Publishing, Paris, https://doi.org/10.1787/9f6c41ce-en.

Ogbulu, O. M. (1999), Industrialization in Abia State: Problems and prospects. *Journal of Industrial Business & Economic Research,* 3(2), 700-707.

Okafor, F. O. (1983), *Investment decisions: Evaluation of projects and securities,* London, Cassell.

Olawale, F., Olumuyiwa, O. and George, H. (2010), An investigation into the impact of investment appraisal techniques on the profitability of small manufacturing firms in

the Nelson Mandela Bay Metropolitan Area, South Africa, *African Journal of Business Management*, 4(7), 1274-1280.

Onuorah, A. C. (2019), Appraisal of capital budgeting techniques and performance of manufacturing firms in Nigeria, *Journal of Management and Decision Sciences,* 22(4), 462-470.

Owualah, S. I. & Ohazebere, E. (2019), The Impact of Financial Crisis on Small and Medium Scale Enterprises Access to Credit in Nigeria. *Research Journal of Finance and Accounting. 10(22), 35-45.*

Peterson, P. P. and Fabozzi, F. J. (2002). *Capital Budgeting: Theory and Practice*. Wiley.

PwC (2020).MSME Survey 2020. Available at https://www.pwc.com/ng/en/services/sme-helpdesk.html

SMEDAN (2021). 2021 MSME Survey report. Available on www.smedan.gov

SMEDAN (2021). National policy on micro, small and medium enterprises (2021 – 2025). Available at https://smedan.gov.ng/images/PDF/NATIONAL-POLICY-ON-MSMEsNew.pdf.

Sungun, G. (2015), Capital investment decision in small and medium-sized enterprises in Turkey, *European Journal of Accounting, Auditing and Finance Research,* 3(1), 46-55.

UNIDO (2017). Improving the business environment. Accessed from https://www.unido.org/sites/default/files/2017-11/..

Wambua, P.M. and Koori, J. (2018), Investment appraisal techniques and financial performance of small and medium enterprises in Nairobi City, Kenya, *International Journal of Current Aspects in Finance,* IV(II), 89-101.

World Bank (2022).Small and Medium Enterprise (SME's) finance. Available on (IBRD-IDA, 2022, www.https://www.worldbank.org/en/topic/smefinance

APPENDIX A
Table 12. Parameter Estimates

Parameter		B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
				Lower	Upper	Wald Chi-Square	df	Sig.
Threshold	[EQUIPEXP=1.00]	-.640	.1381	-.911	-.370	21.502	1	.000
	[EQUIPEXP=2.00]	.823	.1396	.549	1.096	34.733	1	.000
	[EQUIPEXP=3.00]	2.123	.1468	1.835	2.410	208.972	1	.000
[INCRETAX=1.00]		-.919	.2118	.504	1.334	18.825	1	.000
[INCRETAX=2.00]		.853	.2087	.444	1.262	16.694	1	.000
[INCRETAX=3.00]		.608	.1914	.233	.983	10.086	1	.001
[INCRETAX=4.00]		-.042	.1489	-.334	.249	.081	1	.776
[INCRETAX=5.00]		0ᵃ	.	.	.	.	.	.
[INFLATION=1.00]		-.673	.2474	-1.158	-.188	7.396	1	.007
[INFLATION=2.00]		-.550	.2170	-.975	-.125	6.420	1	.011
[INFLATION=3.00]		.061	.1925	-.316	.438	.100	1	.752
[INFLATION=4.00]		.055	.1533	-.245	.356	.130	1	.718
[INFLATION=5.00]		0ᵃ	.	.	.	.	.	.
[HIFRX=1.00]		-.053	.2155	-.476	.369	.062	1	.804
[HIFRX=2.00]		-.442	.1855	-.806	-.078	5.677	1	.017
[HIFRX=3.00]		-.324	.1554	-.629	-.019	4.342	1	.037
[HIFRX=4.00]		-.065	.1418	-.343	.213	.211	1	.646
[HIFRX=5.00]		0ᵃ	.	.	.	.	.	.
[ECOGROW=1.00]		-.542	.2108	-.956	-.129	6.616	1	.010
[ECOGROW=2.00]		.332	.1902	-.041	.705	3.047	1	.081
[ECOGROW=3.00]		.120	.1611	-.196	.436	.555	1	.456

	B	Std. Error			Wald Chi-Square	df	Sig.
[ECOGROW=4.00]	-.160	.1458	-.446	.126	1.199	1	.274
[ECOGROW=5.00]	0ᵃ	.	.	.	.	.	.
[HINTR=1.00]	-.714	.2147	-1.135	-.293	11.058	1	.281
[HINTR=2.00]	-.247	.1921	-.623	.130	1.649	1	.199
[HINTR=3.00]	-.172	.1681	-.502	.157	1.050	1	.305
[HINTR=4.00]	-.109	.1514	-.406	.187	.523	1	.470
[HINTR=5.00]	0ᵃ	.	.	.	.	.	.
[URBDEV=1.00]	-.755	.2332	-1.212	-.297	10.467	1	.001
[URBDEV=2.00]	-.529	.2022	-.926	-.133	6.857	1	.009
[URBDEV=3.00]	-.003	.1724	-.341	.335	.000	1	.987
[URBDEV=4.00]	-.411	.1581	-.721	-.102	6.777	1	.009
[URBDEV=5.00]	0ᵃ	.	.	.	.	.	.
[INFRADEV=1.00]	.309	.2326	-.147	.765	1.767	1	.184
[INFRADEV=2.00]	.027	.1958	-.357	.410	.019	1	.892
[INFRADEV=3.00]	.128	.1754	.216	.471	.529	1	.041
[INFRADEV=4.00]	.093	.1511	-.204	.389	.375	1	.540
[INFRADEV=5.00]	0ᵃ	.	.	.	.	.	.
[INSECURITY=1.00]	-.493	.1901	.120	.865	6.717	1	.010
[INSECURITY=2.00]	.831	.1719	.494	1.168	23.385	1	.000
[INSECURITY=3.00]	.703	.1546	.400	1.006	20.660	1	.000
[INSECURITY=4.00]	.149	.1360	-.118	.415	1.196	1	.274
[INSECURITY=5.00]	0ᵃ	.	.	.	.	.	.
(Scale)	1ᵇ						

Dependent Variable: AMOUNT OF MONEY SPENT ON EQUIPMENT
Model: (Threshold), INCRETAX, INFLATION, HIFRX, ECOGROW, HINTR, URBDEV, INFRADEV, INSECURITY