

STRENGTHENING MSMES THROUGH EFFECTIVE INVESTMENT APPRAISAL TECHNIQUES IN SOUTH-WEST NIGERIA

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Abstract

This study investigated the extent to which micro, small and medium scale enterprises (MSMEs) in the Southwest of Nigeria employed capital appraisal techniques in their real assets investment decision-making. The researchers utilized primary data from a survey of 476 firms which data were analyzed using the ordinal logistic regression and Spearman's Rank correlation methodology. The findings that the extent of usage of appraisal techniques by micro, small and medium enterprise operators in the South-West was infrequent and ranged from 'rarely' to 'often' and some techniques are more popular than others. (2) The importance of early recovery of investment is the dominant factor that operators of micro, small and medium-scale enterprises considered in choosing from among alternative investment appraisal techniques. (3) There was a positive and significant relationship between the use of appraisal techniques such as payback period, net present value and profitability index and a firm's profitability. (4) Socio-economic factors such as increases in tax, inflation, high foreign exchange, economic growth, high interest rate, urban development, infrastructural development, and insecurity influenced the decisions of the enterprises to invest in real physical assets. However, tax increase, high foreign exchange and insecurity exerted more significant influence than the other factors across the groups of the enterprises. (5) There was a significant and positive relationship between the use of investment appraisal techniques such as payback period and profitability index and the quality of investment decisions made by the micro, small and medium enterprises. (6) The extent to which operators of these enterprises were aware of investment appraisal techniques was generally low, but the level of awareness of the availability of professional advice ranged from low to medium. The researchers made the following recommendations: Policy makers should give more attention to the development of the managerial competencies and knowledge of owners and managers of micro, small and medium enterprises through the instrumentality of Business Development service providers. This should be employed in addressing the challenges faced by this subsector in tackling the tension between rational and non-rational methods of decision making. Government should provide enabling environment for business linkages between big businesses and smaller enterprises.

Keywords: Real Assets Investment, Payback Period, Net Present Value (NPV), Profitability Index, Ordinal Logistic Regression.

1.0 INTRODUCTION

Micro, small and medium scale enterprises (MSMEs) form a large percentage of businesses in Nigeria and even the 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 endogenous development of a country. Relative to large firms, MSMEs are more flexible, innovative, entrepreneurial and constitute the vehicle by which the lowest income earners in the society can gain access to economic opportunities at a time when the distribution of income and wealth 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 Price Waterhouse in June, 2020, MSMEs accounted for 96% of the total number of businesses in Nigeria and together they contributed about 50% to the national GDP. In terms of ownership structure, 73% of these MSMEs are sole proprietorship while 14% are private limited liability companies (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 the extant National Policy on MSMEs (2021-2025) clearly acknowledges that the significance of MSMEs as drivers of economic growth in the improvement of national productivity and competitiveness is universally recognized. But in spite of 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 they are always characterized by controversial narratives. 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, the current National Policy on MSMEs (2021- 2025) adopted the twin criteria of employment and business turnover. The other controversy dwells on their environment and potentials. For instance, it is recognized that the government has taken very bold steps and initiatives in all the key elements of the MSME environment - entrepreneurship policy framework, finance, infrastructure, regulatory framework, tax, etc. It is regrettable however to observe that these policy reforms have not translated to significant improvements in the growth of MSMEs (Ogbulu, 1999). Based on OECD (2018) framework, the MSMEs environment is made up of four key

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elements - institutional/regulatory framework, access to markets, access to resources and entrepreneurial culture. These elements interact in a dynamic fashion in influencing MSMEs in their day-today 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, the realization of such an environment remains a mirage in developing countries where selective implementations of reforms is the order of the day. This perhaps informed the choice of the focus of this study - use of appraisal techniques in decision making which relates to managerial competencies (entrepreneurial culture) an aspect of MSME environment that is generally given less attention than the other elements. There is no doubt about the importance of decision-making competencies to managerial cum organizational success. 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 which includes heuristics, is nonfactual, subjective, non-logical and unreliable. Examples of non-rational approaches are experience, gut-feeling, intuition and hunch. Though these approaches have their merits and demerits, it is generally recognized that the rational approach which includes capital budgeting and other quantitative methods are 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. However, for MSMEs to effectively support the industrialization process of the nation and propel other sectors to growth and maturity, there is the need for the operators to objectively appraise investments in real physical assets before investing in any. Appraisal techniques, otherwise called capital budgeting, entail the process of objectively analyzing and evaluating the cost-benefits of investing in a project in order to decide whether resources should be allocated to the project or not. 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 and 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 the use of sophisticated capital budgeting system enhances firms' performance. On the other hand, wrong investment decisions have dire consequences for the survival of any business and studies have shown that one of the critical factors accounting for high rate of business mortality in Nigeria and Africa in general is the non-adherence to sound investment decisions (Ogbulu, 1999). Effective investment decision making is fundamental to corporate survival and longterm success of any enterprise. It is therefore, imperative for MSMEs, to not only be familiar with sound investment appraisal techniques but to also make conscious efforts to religiously apply them whenever the need

to decide on investment in real assets in their organizations arises. Effective managerial competencies and knowledge are needed not just for the adoption of appraisal techniques but also to understand and effectively apply environmental trends and developments. The manager should be able to track the influence such socio-economic factors as inflation, taxation, exchange rate, interest rate, infrastructural development, insecurity and urban development exert influence on a manager's capital investment decisions. As a matter of fact, it is generally agreed that business organizations thrive in a stable macro-economic environment characterized by tight inflation control, low budget deficits, reasonable interest rates and competitive exchange rate. 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. There is thus the controversy as to whether MSMEs do apply investment appraisal techniques before investing in real physical assets. For example, Ayodele (2010), Kerubo, Muturi and Mogwambo (2016) found in their study that small scale firms employ investment appraisal techniques while writers like Olawale, Olumuyiwa and George (2010) and Klammer (1973) hold that small manufacturing firms do not use sophisticated investment appraisal techniques when evaluating projects. Whether promoters of MSMEs apply these project appraisal techniques in evaluating projects in Nigeria is still a subject of much controversy among researchers and practitioners. In specific terms, this research focuses on the South West region of Nigeria, comprising Lagos, Oyo, Osun and Ekiti States, and the following question are pertinent: Do MSMEs in the South West employ investment appraisal techniques in the management of their businesses, and if yes, to what extent? What is the level of significance of the relationship between the adoption of investment appraisal techniques and quality of decisions of MSMEs in the region? These questions translate to six key objectives of the study: examining the extent to which micro, small and medium enterprises (MSMEs) in the South West Nigeria use investment appraisal techniques such as, the Payback Period (PBP), the Internal rate of Return (IRR), the Net Present Value (NPV), the Accounting Rate of Return (ARR), and the Profitability Index (PI) in their real investment decision making; identifying the dominant factors that influence the choice of investment appraisal techniques by MSMEs; also, ascertaining the socioeconomic factor(s) that influence their investments in real assets; finding out if there is significant relationship between the use of appraisal techniques and the quality of investment decisions by MSMEs; finding out if there is a significant relationship between the use of appraisal techniques and quality of investment decisions by MSMEs; and examining the extent of awareness of the techniques by the operators. The actualization of these objectives provides the justification for the study.

2.0 REVIEW OF RELATED LITERATURE

2.1: CONCEPT OF INVESTMENT AND INVESTMENT APPRAISAL

Table 2.3: Classification of MSMEs based on employment and assets

Category	Employment	Asset (N million) (excluding land and building)
Micro enterprise	<10 employees	< 5
Small enterprise	10 - 49 employees	5 but ≤ 50
Medium enterprise	50 – 199	50 but ≤ 500

Source: National Policy on MSMEs, 2017 - 2025

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 the purpose of this study, the researchers have decided to adopt the classification given by SMEDAN.

2.3: ENVIRONMENT OF MSMEs

Business environment refers to the set of forces and conditions that surround and affect a firm in its day-to-day operations. The 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 an environment that is conducive for the sustainable development of the firm. The significance of the word 'enabling' is seen in the development of benchmarks and tools for measuring how enabling is a given business environment. 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 on page.???. the MSME environment is made up of four key components, viz - institutional and regulatory framework, access to markets, entrepreneurial culture and access to resources.

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Fig 2.1: Environment of MSMEs

Source: OECD (2018). Strengthening SMEs and entrepreneurship for productivity and inclusive growth: 2018 SME Ministerial Conference. Accessed from www.oecd.org/smes on 27 August, 2022 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 infrastructural development, 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.

2.2: EMPIRICAL REVIEW

A number of researchers have investigated the adoption of investment appraisal techniques by MSMEs and some of the works are reviewed below.

Ayodele (2010) examined how far SMEs in Nigeria use analytical techniques in project appraisal and the effect of such practice on the investment performance of firms. Findings of the study indicated that firms in Nigeria adopt the use of analytical appraisal techniques and that the use of Payback Period is more popular than others. Olawale, Olumuyiwa and George (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 generated 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 authors 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 authors 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 SME'S: A study of selected enterprises of Haryana. The study sought to find out whether SME's used capital budgeting techniques for their long-term capital investment decisions. The researcher collected data from 400 SMEs through questionnaire and interview. The researchers used simple percentage in testing the research proposition. The major finding of the study is that only a small percentage (12.5%) of firms between capital budgets for long term decisions. Lidija Barjaktarović, Renata Pindžo, Katarina Đulić, Ana Vjetrov (2015) investigated the capital budgeting techniques implemented by small and medium-sized enterprises in Serbia. The study had two hypotheses, viz: The micro, small and medium-sized companies in Serbia use payback criterion as the most dominant investment evaluation technique; the micro, small and medium-sized companies in Serbia are mostly inclined to determine the cost of capital following the historical returns on investments. Based on survey design involving 30 MSMEs, and while data were collected through structured questionnaire, the hypotheses were tested with simple percentages. The findings were that the payback period was the dominant technique used by the firms and that the firms utilized the historical returns on investment in determining the cost of capital. Mogwambo, Mukras and Oima (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 is survey design with a

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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 85.7% of investments alternatives. Furthermore, ranking of the investment alternatives is influenced by the type of investment appraisal tools applied while a significant relationship exists between investment appraisal techniques and portfolio efficiency. Hence the authors concluded that investments appraisal techniques application influence efficient portfolio selection in the soft drink industry in Kenya. In addition, part analyses of the investment appraisal techniques on portfolio efficiency show that PBP has a higher significant relationship with portfolio efficiency. Study results suggest the need for firms to maximize the application of net present value and payback period to enhance portfolio efficiency to realize optimal performance. In another study, Kerubo, Muturi and Mogwambo (2016) investigated the influence of investment appraisal techniques on financial performance of small manufacturing firms in Kisii town, Kisii County, Kenya. The authors employed the survey research methodology in which the target population of study was 454 respondents from small manufacturing firms in the Juakali sector, Kisii town. A sample size of 136 respondents was selected using stratified random sampling technique. Method of analysis adopted was the descriptive statistics. Findings of 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 decision of listed manufacturing companies in Sri Lanka. The study employed a field survey from January to March 2017 and primary data was collected through self-administered questionnaires 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 decision. Sungun (2015) investigated capital investment decisions in small and medium sized enterprises in Turkey. The study which focused on how capital investment decisions are made in SMEs in Turkey was based on descriptive survey of 65 medium and small-scale enterprises. Data were obtained through interview and questionnaire. On the basis of 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. The empirical review presented above is a bird's eye view of the plethora of studies and investigations that have been undertaken in

different parts of the world to establish whether MSMEs do employ sound appraisal techniques before investing in real physical assets and to examine the extent to which the use of such appraisal techniques impacts on the growth and performance of MSMEs. Evidently, the studies failed to agree on the direction of the phenomenon.

3.0 METHODOLOGY

3.1 DATA

The study adopted survey research design and this is because of the nature of the phenomenon of interest. The explanatory and cross-sectional survey utilized self-reporting questionnaire to elicit data from the respondents. The study made use of both primary and secondary data. Primary data as provided by the respondents were critical to the understanding of the experiences of the respondents. In line with the research design and number of respondents, the questionnaire was used to elicit responses from a sample of micro, small and medium enterprises (MSMEs) drawn from four states in the South-West geo-political zone.

3.2 DESIGN AND ADMINISTRATION OF SURVEY INSTRUMENT - The questionnaire has both structured and open-ended questions that elicited individual opinions. The structured questions ranged from 3 point to 5-point Likert scales. The instrument was administered by hand through research assistants who offered assistance to the respondents in the course of filling the survey instrument. In choosing research assistants consideration was given to those who had familiarity with basic research and the terrain of the location of the study. The research assistants offered assistance to respondents who had challenges with filling the survey instrument. The collection of the questionnaire was done at the spot by the research assistants. But there were repeat calls for well-informed respondents who could not complete the questionnaire during the first contact. The administration of the instrument took four months. A copy of the questionnaire is attached as appendix A.

3.3 POPULATION AND SAMPLE SIZE DETERMINATION: The determination of the sample size was done through both scientific (probability) and non-scientific (non-probability) methods and this was due largely to the differences that exist among the components of the MSMEs. For instance, while medium and to some extent small businesses operate in the formal sector, micro businesses operate in the informal sector. Micro businesses are neither registered nor do they have an association. Even in instances where a fledgling association (registered with the State Ministry of Commerce) existed, efforts to get the list of members proved abortive. Another significant point to note is that the register of members obtained from Chambers of Commerce and the National Association of Small-scale Industrialists (NASSI) in some of the States were not current - there were so many names of firms that had gone into extinction or were moribund.

Arising from the above, the determination of the sample size was first stratified and thereafter Taro Yamene technique was used to determine the sample size for medium and small-scale businesses based on the membership

registers from Chambers of Commerce and Industry and NASSI as the population frame. On the other hand, because the population of micro firms was unknown the sample size was determined based on Cochran's technique for infinite population. However, the actual identification and selection of the firms was conveniently done (see table 3.4).

Table 3.1 Sample size of the states

S/no	State	Sample size
1	Ekiti	200
2	Lagos	200
3	Ogun	150
4	Osun	150
	Total	700

Table 3.2 Questionnaire Distribution

State	Target pop. for SMEs	Sample size for SMEs	Sample size for Micro Enterp	No. of questionnaires returned	% of returned
Ekiti	130	40	50	101	21.2
Ogun	261	89	80	118	24.8
Osun	240	150	60	111	23.3
Lagos	381	106	125	146	30.7
Total	912	385	315	476	100.0

Source: Field work, 2023

Taro Yamene technique and Cochran's formula were used to determine the sample size for medium and small-scale businesses and micro firms respectively (385 for small and medium firms and 315 for micro firms, making them 700 as shown in table 3.3). Out of the 700 questionnaires administered, 476 questionnaires, 68%, were returned.

3.4 DATA ANALYSIS TECHNIQUE - The data analysis techniques employed in this research included descriptive statistics, frequency distribution, graphs, weighted average index and charts. In addition, ANOVA,

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regression (ordinal and multinomial), generalized linear model and Kruskal-Wallis test were used in testing the hypotheses on SPSS software package.

4.0 RESULTS

A total of seven hundred copies of the questionnaire were distributed out of which four hundred and seventy-six representing 68.35 percent were returned (see table 3.4).

Table 4.1 Distribution of Responses to key attributes

Type of business	Freq	%	Exp. on equipment	Freq	%
Primary	96	20.2	<N1m	148	31.8
Secondary	86	18.1	N1-2.5m	130	28.0
Tertiary	293	61.7	N2.6-5m	158	34.0
Total	475	100.0	>N5m	29	6.2
			Total	465	100.0
Educational qualification	Freq	%	Risk analysis	Freq	%
WASC	177	37.3	Never	91	19.7
B.Sc/HND	263	55.5	Sometimes	217	47.0
Masters	31	6.5	Always	154	33.3
Doctorate	3	0.6	Total	462	100.0
Total	474	100.0			
Year of start-up	Freq	Av. %	Total assets	Freq	%
1982 – 1991	26	(2.6, 5.5%)	<N10m	169	35.5
1992 – 2001	69	(6.9, 14.5%)	N11 – 20m	157	33.0
2002 – 2011	179	(17.9, 37.6%)	N31 – N40M	91	19.1
2012 – 2021	200	(20.2, 42.4%)	>N40m	35	7.4
Total	474	(47.6, 100.0%)		20	4.2
			Total	472	100.0
Type of CEO	Freq	%	Awareness of appraisal technique	Freq	Mean
Owner manager	393	82.6	Payback period	467	2.63

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Professional manager	83	17.4	Internal rate of return	468	2.31
Total	476	100.0	Net present value	467	2.46
			Accounting rate of return	466	2.40
			Profitability index	460	2.52

SOURCE: Field work, 2023

Table 4.1 shows that 293 or 61.5% of the firms belong to the service sector. On the other hand, 96 firms (20.2%) and 86 firms (18.1%) belong to the primary and secondary categories respectively. The table also shows that the respondent firms were established between 1982 and 2020. Between 2012 and 2020, South West recorded the highest number of firms per 10year average, 20.2 (42.4%), followed by 2002 - 2011, 17.9 (37.6%). Two types of managers were in charge of the firms. While owner managers were in the majority- 393 or 83%, professional managers were in charge of 83 or 17% of the firms. The distribution of the highest educational qualifications of the CEOs shows that majority- 263 or 55.3% of the CEOs are degree and HND holders. This is followed by WASC holder 177 (or 37.2%); M.Sc. Degree holders 31(or 7%) and lastly PhD holders 3 (or 0.6%). Though in a minority, it is quite remarkable that there are CEOs who possess PhD degrees. The distribution of the value of the total assets of the firms is categorized into five levels. Firms with total assets worth less than N10 million naira were 169 or 35.5% of the sample. The next group is made up of 157 firms (33%) with total assets worth between N10 and N20 million naira. Those with total assets worth between N21 and N30 million naira were 91 which is 19.1% of the sample. While those with total assets of between N31 and N40 million naira were 35 or 7.4%, and the smallest group is made up 20 firms (representing 4.2%) with total assets of above.

Table 4.1 also shows the distribution of firms that engage in formal risk analysis and how frequently they did it. While 371 firms or 78% engage in formal risk analysis, only 154 of them or 32.4% do so always. On the other hand, 91 or 19% of the firms did not carry out formal risk analysis. The distribution of the total expenditure on equipment by the firms shows that firms with a total expenditure between N2.6 million and N5 million were in the majority (158 representing 33.2%). On the other hand, while 148 firms (or 31.1%) spent less than N1 million on equipment, 130 firms (27.3%) spent between N1 million and N2.5 million on equipment. The smallest group of 29 firms (6.1%) spent above N5 million naira. The distribution of the level of awareness of capital investment techniques among the respondents is based on the individual dimensions of the awareness continuum. The 'low awareness' dimension has the highest frequency across the five techniques. However, the use of the weighted mean value proved more effective as it shows a more realistic assessment in terms of level and rating among the

techniques. Based on a 4.00 maximum value, none of the techniques achieved up to 3.00 mean threshold in terms of level of awareness. Nevertheless, ranking the techniques based on the mean value yields the following order: payback period (2.63), followed by profitability index (2.52), net present value (2.46), accounting rate of return (2.40) and internal rate of return (2.31).

4.1 RE-STATING THE HYPOTHESES AND INTERPRETING RESULTS

The objectives of the study are:

Obj 1: To determine the extent to which MSMEs employ any or all of these - the Payback Period (PBP), the Internal rate of Return (IRR), the Net Present Value (NPV), the Accounting Rate of Return (ARR), and the Profitability Index (PI) - as an investment appraisal technique. OBJ 2: To identify the dominant factor considered by MSMEs in choosing a particular capital investment technique.

Obj 3: To find out if there is any significant relationship between the profitability of MSMEs and investment appraisal technique adopted.

Obj 4: To determine the extent to which socio-economic factors influence MSMEs investment in real physical assets in Nigeria.

Obj 5: To find out if there is a significant relationship between the use of appraisal techniques and quality of investment decisions by MSMEs in Nigeria.

Obj 6: To examine the extent to which MSMEs are aware of investment appraisal techniques in Nigeria. Thus, the null hypotheses are:

H₀₁: There is no significant relationship between frequency of engagement in formal risk analysis (as response variable) and extent of usage of the appraisal techniques (as predictor variable).

H₀₂: There is no dominant factor of influence among simplicity, ease of understanding, early recovery of returns, risk and cost of choosing a particular capital investment technique by MSMEs.

H₀₃: There is no significant relationship between the profitability of MSMEs and investment appraisal adopted.

H₀₄: Socio-economic factors do not influence MSMEs investment in real physical asset in Nigeria to a large extent.

H₀₅: There is no significant relationship between the use of appraisal techniques and the quality of investment decisions by MSMEs in Nigeria.

H₀₆: The level of extent to which MSMEs are aware of investment appraisal techniques is low.

The first objective is transformed into a derivative hypothesis of -

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H₀₁: There is no significant relationship between MSMEs' engagement in formal risk analysis (response variable) and usage of appraisal methods.

Translating H₀₁ into a model, we have:

RISTAN = f (Appraisal Techniques: PAYBP, INTERNALRR, NETPV, ACCRR, PROFIT). The model sought to determine the extent to which MSMEs used the following appraisal techniques – payback period (PBP), internal rate of return (IRR), net present value (NPV), accounting rate of return (ARR) and profit index (PI) in evaluating their real asset investments. We tested it with ordinal logistic regression and the outputs were shown below:

Table 4.1: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	630.285			
Final	528.008	102.277	20	.000

Link function: Logit.

The model fitting information in table 4.1 shows whether any of the coefficients are statistically significant. That is whether the variables that were added statistically significantly improve the model compared to the intercept alone and this was determined from the 'sig' column of the table. Given that the p-value <.05 (.000), we conclude that the full model statistically significantly predicts the dependent variable better than the intercept-only model alone.

Table 4.2: Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	440.097	366	.075
Deviance	423.836	366	.124

Link function: Logit.

Goodness of fit is 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

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significant values mean that the model does not fit the data well. However, both the Pearson ($p = .075$) and Deviance ($p = .124$) chi-square p -values as shown in table 4.2 are insignificant which shows a good fit between the model and the data. The table of parameter estimates, table 4.3 (APPENDIX 1), presents the coefficients of the model and shows that each dummy variable has coefficients for the different techniques. Table 4.3 shows statistically significant results for payback period and profitability index techniques, and insignificant results for internal rate of return, net present value and accounting rate of return. Following our focus on the extent of usage of the appraisal techniques, the dummy variables representing the NEVER USED category of the techniques were ignored. Therefore, the PAYBP-2, with the positive estimate of 1.171, p -value = 0.048 is the dummy variable representing the RARELY USED category of Payback period technique. This shows that the manager is likely to 'rarely' carry out formal risk analysis of investments through the use of appraisal techniques. PAYBP-3, with the positive estimate of 1.036, p -value = .025 is the dummy variable for SOMETIMES USED category of payback period technique, and it shows that the manager is likely to 'sometimes' carry out formal risk analysis of investments through the use of appraisal techniques. PROFITI-2, with the positive estimate of 0.088, $p = .005$ is the dummy variable representing the RARELY USED category of profitability index technique. The positive estimate shows that the manager is likely to rarely carry out formal risk analysis of investments through the use of appraisal techniques. PROFITI-3, with the positive estimate of 0.349, $p = .023$, is the dummy variable representing the SOMETIMES USED category of profitability index technique, and it shows that the manager is likely to 'sometimes' carry out formal risk analysis of investments through the use of appraisal techniques. PROFITI-4, $B = .235$, $p = .003$ is the dummy variable representing the OFTEN USED category of profitability index technique. The positive estimate shows that the manager often times carries out formal risk analysis of investments through the use of appraisal techniques. The foregoing analysis identified two appraisal techniques, viz, payback period and profitability index that are commonly used by MSMEs and the extent of the level of usage of the techniques varied from rarely to often.

H₀₂: There is no dominant factor of influence among simplicity, ease of understanding, early recovery of returns, risk and cost of choosing a particular capital investment technique by MSMEs in the South West.

Our H₀₂ synchronizes with objective 6 and the model is:

Factor Influence of

Choosing an Appraisal

Technique = f (Component Factor:

SIMPLICITY, EASE OF UNDERSTANDING,

EARLY RECOVERY OF RETURNS, RISK, COST)

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In testing this hypothesis, we utilized factor analysis (principal component analysis). We used Kaiser-Meyer-Olkin, KMO, and Bartlett's test to determine sampling adequacy, and Total Variance Explained and Component Matrix (principal component analysis) to determine the component factor that most influences MSMEs' choice of a particular appraisal technique. Table 4.4, an abridged table, shows the results: i are shown below; the rest are shown in the appendix.

Table 4.4 KMO, Bartlett, Total Variance Explained and Component Matrix Tests

Adequacy Test	Total Variance Explained					
KMO		Componen t	Eigenvalue		Component Matrix	
- Sampling adequacy	0.837		Total	% of variance		Componen t 1
-Approx. Chi-Square	2344.954	1	4.026	80.513	Simplicity	0.882
Bartlett's Test		2	0.596	11.928	Ease of understanding	0.937
-df	10	3	0.175	3.507	Early recovery of returns	0.948
-Sig.	0.000	4	0.124	2.490	Risk	0.869
		5	0.078	1.563	Cost	0.846

The Kaiser-Meyer-Olkin (KMO) is a measure of sampling adequacy. Its statistic varies between 0 and 1, and Kaiser (1874) recommends accepting values greater than 0.5. Table 4.4 shows a KMO value of .837 which is acceptable. On the other hand, Bartlett's test is one of sphericity. It tests the null hypothesis that the original correlation matrix is an identity matrix. Based on Bartlett's test, the significance value must be less than .05 for the data to be accepted and given the significance value of .000, the sphericity test is good. The total variance explained test shows the only factor that explain greater percentage of the total variance and which also has

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eigenvalue greater than 1. That is component 1. The component matrix, which shows the loading of each variable onto the factor, identifies the dominant factor that influences the choice of capital investment technique. Based on the component matrix, the component that has been extracted is the importance of early recovery of investment in choosing a particular investment technique. It is therefore obvious that the dominant factor that influences the choice of capital investment technique is the importance of early recovery of investment.

H₀₃: There is no significant relationship between the profitability of MSMEs and investment appraisal adopted. The hypothesis was tested with generalized linear model (glm) and the outputs are shown below:

Table 4.5 Goodness of Fit

	Value	df	Value/df			
Deviance	316.338	242	0.907			
Scaled Deviance	316.338	242				
Pearson Chi-Square	451.318	242	1.065			
Scaled Pearson Chi-Square	451.318	242				
Omnibus Test ^a						

-Likelihood Ratio Chi-Square 97.473 10 0.000 (Sig)^a Compares the fitted model against the thresholds-only model.

The values/df of the Deviance and Pearson chi-square as shown in the Goodness of Fit table 4.4 differ. While the Deviance value is within acceptable range (<1.0), the Pearson value falls outside the range. Based on the Deviance chi-square value the model is appropriate. The Omnibus test shows how good is the full model and given the p-value of <0.05 as shown in the table 4.4, the full model is good.

Table 4.5 Parameter Estimates

	Estimate (B)	Std. Err	p-Value	Test
PAYBP=2.00	1.771	0.2372	0.000	Sig.
INTERNALRR=2.00	-1.583	0.3963	0.000	Sig.
NETPV=2.00	0.847	0.4029	0.035	Sig.
ACCRR=2.00	-0.317	0.4276	0.459	Insig.
PROFITI=2.00	1.184	0.4510	0.009	Sig.

Dependent Variable: what is the extent of the effect of using appraisal techniques on the overall profit after tax?

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Model: (Threshold), PAY_BP, INTERNA_RR, NET_PV, ACC_RR, PROFI_TI. The parameter estimates table (Table 4.5) shows the dummy variables of payback period, internal rate of return, Net present value and profit index techniques as having p-values of less than .05. The dummy variables are explained thus: PAY_BP 2, B = 1.771, p = .000 is the dummy variable representing the sometimes used category of payback period technique. The positive estimate with a p-value <.05 shows that it has the likelihood of influencing a firm's profitability than using the technique always which is the reference category. INTERNA_RR 2, B = -1.583, p = .000 is the dummy variable for sometimes used category of internal rate of return. The negative estimate with a p-value of <.05 shows that it has less likelihood of influencing a firm's profitability than using the technique always which is the reference category. NET_PV 2, B = .847, p = .035 is the dummy variable representing the sometimes-used category of net present value technique. The positive estimate with a p-value of <.05 shows that it has the likelihood of influencing a firm's profitability than using the technique always which is the reference category. PROFI_TI 2, B = 1.184, p = .009 is the dummy variable representing the sometimes-used category of the profit index technique. The positive estimate with a p-value of <.05 shows that it has the likelihood of influencing a firm's profitability than using the technique always which is the reference category. Based on the foregoing tests, we reject the null hypothesis that there is no significant relationship between a firm's profitability and the appraisal techniques used. Instead, we accept the alternate that there is a significant and positive relationship between profitability and appraisal techniques. Nevertheless, it should be pointed out that not all appraisal techniques exerted positive influence of a firm's profitability. Three techniques, viz, payback period, net present value and profitability index were identified as the techniques that influenced a firm's profitability.

H₀₄: Socio-economic factors do not influence MSMEs investment in real physical asset in South West, Nigeria to a large extent the test of this hypothesis was done with ordinal logistic regression. This was done after expenditure on equipment was transformed and used as a dependent variable. Therefore, our model is:

EQUIPEXP= f (INCRTAX, INFLATION, FOREX, ECOGROW, HINTREST, URBANDEV, INFRADEV, INSECURITY)

Table 4.6 Goodness of the model

	-2 Log Likelihood	Chi Square	df	Sig
Model intercept only	746.278			
Final model	631.571	114.707	17	.000
Pearson		865.407	463	.000
Deviance		499.762	463	.115

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Link function: Logit

The p-value of the final model, as shown in table 4.6 above, is less than .05 which shows the appropriateness of the model. The p-values of the Pearson (0.000) and Deviance (0.115) chisquare parameters differ. While the p-value of the Pearson chi-square is significant ($<.05$) which is unacceptable, that of Deviance is insignificant ($>.05$) and acceptable. On the basis of the Deviance p-value we accept the goodness of the model.

Table 4.7 Parameter Estimates

Parameter	Estimate (B)	Sig	Parameter	Estimate (B)	Sig
INCR_TAX=1.00	1.557	.000	HINT_RATE=1.00	-0.071	.863
INCR_TAX=2.00	1.920	.000	HINT_RATE=2.00	0.488	.134
INFLA_TION=1.00	-1.622	.004	URBAN_DEV=1.00	-0.153	.750
INFLA_TION=2.00	-1.443	.003	URBAN_DEV=2.00	0.061	.858
FOREX=2.00	0.739	.028	INFRA_DEV=1.00	0.782	.139
ECO_GROW=1.00	-1.311	.001	INFRA_DEV=2.00	-0.079	.826
INSECU_RITY=2.00	0.103	.033			

Link function: Logit

Table 4.7 above shows the parameter estimates of the dummy variables of the socio-economic factors that have p-values of less than .05 and those with p-values greater than .05. The dummy variables are explained, on the basis of those with positive and significant estimates which are greater in number, thus:

INCRE_TAX 2, B = 1.920, p = .000 is the dummy variable for low extent category of factors, increase in tax. The positive estimate with a p-value of $<.05$ shows that it has a low likelihood of influencing a firm's investment in real physical asset when compared to the high extent reference category.

FOREX 2, B = .739, p = .028 is the dummy variable representing the low extent category of the foreign exchange factor. The positive estimate with a p-value of $<.05$ shows that it has low likelihood of influencing a firm's investment in real physical asset when compared to the high extent reference category.

INFLA_TION 2, B = -1.443, p = .003 is the dummy variable representing the low extent category of inflation factor. The negative estimate with a p-value of $<.05$ shows that it has less likelihood of influencing a firm's investment in real physical asset when compared to the high extent reference category.

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INSECURITY 2, $B = .103$, $p = .033$ is the dummy variable representing the low extent category of insecurity factor. The positive estimate with a p-value of $<.05$ shows that it has low likelihood of influencing a firm's investment in real physical asset when compared to the high extent reference category.

Based on the foregoing, we reject the null hypothesis that socio-economic factors have no significant relationship with a firm's investment in real physical asset. Instead, we accept the alternate hypothesis to the effect that socio-economic factors have positive and significant relationship with a firm's investment in real physical asset. However, it has to be pointed out that not all the identified socio-economic factors exert positive and significant relationship on a firm's investment in real physical assets. The test confirmed that increase in tax, high foreign exchange rate and insecurity have positive and significant relationship with a firm's investment in real physical asset. On the other hand, while inflation showed a negative but significant relationship, economic growth, urban development, and high interest rate and infrastructural development showed no relationship at all.

H_{05} : There is no significant relationship between the use of appraisal techniques and the quality of investment decisions by MSMEs in South West Nigeria.

Our model is:

$$\text{IMPQUAD} = f(\text{PAYBP}, \text{INTERNALRR}, \text{NETPV}, \text{ACCRR}, \text{PROFIT})$$

That is, important quality investment decisions are a function of the combined effects of payback period, internal rate of return, net present value, accounting rate of return and profitability index.

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

Table 4.8 Goodness of the model

	-2 Log Likelihood	Chi Square	Df	Sig
Intercept Only	811.870			
Final	672.001	139.869	20	.000
Pearson		711.930	416	.212
Deviance		544.609	416	.048

Link function: Logit

Based on the p-value of .000 which is $<.05$ as shown in table 4.8 above, the model is appropriate. The p-values of the Pearson (0.212) and Deviance (0.048) chi-square parameters differ. While the p-value of the Deviance chi-square is significant ($<.05$) which is unacceptable, that of Pearson is insignificant ($>.05$) and acceptable. The

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insignificant Pearson chi-square p-value confirms the goodness of the model. Table 4.9 Positive and Significant Parameter Estimate (Abridged)

Parameter	Estimate (B)	Sig
PAYBP=2.00	2.233	.000
PAYBP=3.00	1.143	.009
PROFITI=2.00	1.796	.036

Link function: Logit

The parameter estimates (table 4.41) show the categories of the variables that are significant as shown below:

PAYBP-2, B = 2.233, p-value = 0.000 is the dummy variable representing the RARELY USED category of Payback period technique. The positive estimate shows that it has a likelihood to positively affect the quality of investment decisions when compared to the always reference category.

PAYBP-3, B = 1.143, p-value = 0.009 is the dummy variable representing the SOMETIMESUSED category of Payback period technique. The positive estimate shows that it has a likelihood to positively affect the quality of investment decisions when compared to the always reference category.

PROFIT-2, B = 1.796, p-value = 0.036 is the dummy variable representing the RARELY USED category of Profitability index technique. The positive estimate shows that it has a likelihood of positively affecting the quality of investment decision when compared to the always reference category.

Clearly, the above test confirms that appraisal techniques have positive and significant relationship with the quality of a firm's decisions which leads to the rejection of the null hypothesis. Nevertheless, it is necessary to point out that not all appraisal techniques exert positive and significant influence of the quality of decision making. For instance, arising from the above test, only payback period and profitability index showed positive and significant relationship with the quality of decisions made by MSMEs. The influence was manifested at two levels of usage – rarely and sometimes.

H₀₆: The extent to which MSMEs are aware of investment appraisal techniques is low.

Hypothesis 6 arises from the fact that MSMEs in the Southwest might be dependent on their personal experiences/skills/intuitions in investment decision making and not aware of the use of professional advice or of capital appraisal techniques. Using Experience/Skill/Intuition as a reference category and setting it to zero (because it is redundant), we reduce our final model to;

EXPERIENCE/SKILL/INTUITON= f (PROFESSIONAL ADVICE, CAPITL APPRAISAL TECHNIQUE)

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Our reduced model above is formed by omitting an effect from the final model

We tested the hypothesis with a multinomial regression. With this, we identified the level of awareness of investment appraisal techniques vis-a viz other methods of investment decision making. The outcome of the test is as follows:

Table 4.10 Goodness of Model

Model fitting criteria	-2 Log Likelihood	Chi Square	Df	Sig
Intercept Only	66.326			
Final model	36.729	29.598	6	.000
Pearson		98.946	3	.302
Deviance		76.738	3	.051

Link function: Logit

Given a significant p-value of .000 ($<.05$) as shown in table 4.10, the final model is good. In terms of goodness of fit as depicted in same table, the two chi-square measures, Pearson and Deviance have contradictory p-values. While the Deviance p-value is significant (.021) and therefore unacceptable, the Pearson chi-square p-value is insignificant (.302), and, therefore, confirms the appropriateness of the model.

Table 4.11 Likelihood Ratio Tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	36.729 ^a	.000	0	.
AWARE_NESS	66.326	29.598	6	.000

Link function: Logit

The Chi Square coefficient in table 4.11 is the difference in -2 Log Likelihood between the final and reduced models. The reduced model is equivalent to the final model because omitting the effect does not increase the degree of freedom. The likelihood Ratio Tests, as depicted in the table, show that awareness is significant with a p-value = .000 which is $<.05$.

Table 4.12 Significant Parameter Estimates

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Method used in capital investment decision making		Estimate (B)	Sig
Professional advice	AWARE_NESS=1.00	.749	.066
	AWARE_NESS=2.00	.775	.019
	AWARE_NESS=3.00	1.127	.000
Use of appraisal technique	AWARE_NESS=2.00	.732	.036

Link function: Logit

The dummy variables that are significant, as shown in table 4.12, are as follows: *Awareness of professional advice (AWARE_NESS-2, B = .775, p-value = .019) is the dummy variable of the low level of awareness category of professional advice relative to EXPERIENCE/SKILL/INTUITION with other variables held constant. It is significant (pvalue = .019) with a multinomial logit log-odds of .775 given that all other variables of the model are held constant.

AWARE_NESS-3, B = 1.127, p-value = .000) is the dummy variable of the medium level of awareness category of professional advice relative to EXPERIENCE/SKILL/INTUITION with other variables held constant. It is significant (p-value = .019) with a multinomial logit logodds of 1.127 given that all other variables of the model are held constant.

*Awareness of capital appraisal technique (AWARE_NESS-2, B = .732, p-value = .036) is the dummy variable of the low level of awareness category of capital appraisal techniques relative to **EXPERIENCE/SKILL/INTUITION** with other variables held constant. It is significant (pvalue = .036) with a multinomial logit log-odds of .732 given that all other variables of the model are held constant.

The test of the hypothesis on the level of extent of awareness of capital investment appraisal techniques by MSMEs revealed that the extent of awareness of the techniques is low. It should however, be pointed out that the identification of the extent of awareness of the appraisal techniques was done in comparison to two other methods – experience/intuition and professional advice. The test clearly shows that operators of MSMEs have low to medium extent level of awareness of professional advice but low level of awareness of capital investment techniques.

5.0 DISCUSSION OF FINDINGS

The results of the first hypothesis showed that two techniques (payback period and profitability index) out of five, on the extent of usage, were popular among operators of MSMEs in SouthWest States of Nigeria, and the extent of the level of usage varied from rarely to often. This partly corroborates the findings of Jifar (2020), Ndanyenbah and Zakaria (2019) and Ayodele (2010) who discovered that operators of SMEs generally use appraisal

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techniques. Equally the popularity of payback period technique is in line with the finding of Ayodele (2010). This is quite understandable given that the adoption of appraisal techniques is a function of many factors such as level of education, exposure, competence or technical capacity and willingness to accommodate professionals. So, depending on the interplay of these factors, a firm may adopt any of the techniques on a consistent or infrequent basis or even resist the appeal to use such techniques. The second hypothesis showed that early recovery of investment was the dominant factor that was of a great importance among operators of MSMEs in the Southwest. Ordinarily, MSMEs and even big businesses have heightened interest in early recovery of investment not just because of the benefit of taking advantage of sudden investment openings/opportunities but also because of the danger of tying down limited funds.

Hypo 7 tested if there is a significant and positive relationship between the profitability of MSMEs and investment appraisal adopted. The test result of the third hypothesis showed that three techniques, viz, payback period, Net Present Value and Profitability Index have significant influence on a firm's profitability. This finding corroborates the findings of Wambua and Koori (2018), Olawale, Olumuyiwa and George (2010) and Kerubo, Muturi and Mogwambo (2016). It is necessary to point out that in line with the identification of payback period technique, Wambua and Koori (2018) identified it as the most important predictor of financial performance. However, the strength of the relationship varied depending on the frequency of usage; infrequent usage of the techniques showed less likelihood of positively influencing a firm's profitability. Understandably, infrequent use of a technique hinders perfection and the attendant benefits of the techniques.

The test result of the fourth hypothesis showed that out of the eight socio-economic factors, only three – increase in tax, high foreign exchange and insecurity were significant and positive and their extent of the level of influence on MSMEs' investment in real physical asset was low. The factor of inflation was significant but exerted negative influence on investment. Understandably, investment in real physical assets can only be undertaken in response to a congenial investment climate. The test outcome of the fifth hypothesis showed that two appraisal techniques, payback period and profitability index, have a positive and significant relationship with improved quality of decision making by MSMEs in the Southwest. The influence was manifested at two dimensions of extent – rarely and sometimes. The test outcome of the sixth hypothesis showed that the level of awareness of investment appraisal techniques (based on a comparison of the level of awareness of three methods of investment decision making, viz, experience/intuition, professional advice and appraisal techniques, in which ordinarily, experience/intuition is the default method) by the MSMEs was low. This does not agree with the findings of Ndanyenbah and Zakaria (2019) and Jifar (2020) who discovered that SMEs operators had significant knowledge of investment appraisal techniques. But the extent of awareness of professional advice ranged from low to

medium. Obviously, operators of MSMEs have better acquaintance with professional advice than the personal adoption of capital appraisal techniques.

6.0 CONCLUDING REMARKS

There is no doubt that the findings of this study have confirmed that the operators of MSMEs generally have low level of awareness of investment appraisal techniques and this accounts for the half-hearted and infrequent adoption of the techniques. This is in spite of the abounding evidence of the positive impact of the use of 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 such as payback period and the pre-dominance of the criterion of early recovery of investment in the choice of a technique. 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 asset, tax and insecurity exerted greater influence. We recommend as follows: that policy makers should give more attention to the development of the managerial competencies and knowledge of owners and managers of MSMEs through the instrumentality of Business Development service providers. The aim is to tackle the tension between rational and non-rational methods of decision making currently seen in MSMEs in the Southwest. 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 repertoire of experiences and practices. Such exposures are very effective in cultivating change readiness.

7.0 LIMITATIONS OF THE STUDY

The major limitation of this study is the challenge of generalization of the findings in the face of the aggregation of heterogeneous groups of medium, small and micro businesses. Related to the above is the challenge of generalization which is inherent in survey research.

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