

Capital Budgeting Practices In Emerging Market Economies: Evidence From Listed Ghanaian Firms

Antwi Nana Kofi Tufuor¹ James Ntiamoah Doku^{2*}

1. P.O.BOX TF 354, Trade Fair Accra Ghana

2. Department of Banking and Finance, Methodist University College Ghana. P.O.BOX DC 94, Dansoman Accra, Ghana

*Email Corresponding author: jmsdoku@yahoo.com

Abstract

This study investigates into the application of capital budgeting practices by listed firms on the Ghana Stock Exchange. A sample of listed firms from banking, brewery, manufacturing, distribution and insurance were selected. The key findings from the study show that firms listed on the Ghana Stock Exchange adopt text book capital budgeting techniques in practice. Most of them use NPV, PBP, DPBP and IRR. Though this demonstrates a clear reduction in the theory practice gap, the modified internal rate of return (MIRR), and the Accounting rate of return (ARR) have not attracted much attention compared to the NPV. This study thus confirms the popularity and usage of DCF capital budgeting methods (NPV and IRR) due to their simplicity. The study also finds that most of the firms use weighted average cost of capital (WACC) as the cost of capital in appraising investment projects.

Key words: Capital budgeting techniques, investment decision, listed firms, Ghana

1.0 Introduction

Theoretical propositions have it that, one of the basic aims of managers is to maximize the value of shareholders' wealth on whatever decision they pursue. Capital investment decision making, also known in finance theory as capital budgeting, is one of the important decisions financial managers make. It usually involves investing huge amounts of money into projects that have long life span and once such investment is done, it is irreversible. Therefore, it is important that logical and acceptable methods are followed to minimize the degree of error in making such decisions that seek to maximize shareholders wealth (McLaney, 2006). Also, given the usually huge investment outlay associated with capital budgeting, it is appropriate firms identify and adopt viable alternative appraisal techniques in their capital budgeting decision making. Available capital budgeting techniques developed ranges from traditional to the most highly complicated techniques involving the use of sophisticated machines. For example, Pandey (2002); and Kurfi (2003) classified these techniques into discounted cash flow (sophisticated) models and traditional or fundamental models. The discounted cash flow techniques were net present value (NPV), internal rate of return (IRR), and profitability index (PI) which takes into cognizance both the overall profitability of projects and also the timing of returns (Brealey and Myers, 2003).

In addition, the discounted cash flow model were concerned with cash receipts and payments made (or foregone), and considers only relevant cost (Olowe, 1998). The traditional investment appraisal techniques were the pay back and accounting rate of return (ARR), which according to Kurfi (2003) did not incorporate the fundamental concept of time value of money. Though simple to use, the ARR does not relate directly to shareholder wealth and takes no account of the timing of cash flows. Again, compared to a discounted cash flow technique like the NPV, the payback period (PBP), is not difficult to understand and can give liquidity insight but it ignores inflows after the payback date.

With regards to the applications of these techniques, existing evidence is not conclusive. For instance, Cotton and Schinski (1999) found that among small companies, discounted cash flow techniques were not so widespread and that larger firms were more likely to have post-audit procedures. On the contrary, Arnold and Hatzopoulos (2000) surveyed 100 of the largest 1000 UK businesses and found that 80% of the businesses used the NPV in conjunction with one other method. They also found that all the large businesses surveyed used NPV or IRR or both for appraising investment projects. Bailes et al., (1998) also studied the capital budgeting practices of undisclosed selected countries and observed that IRR was the most preferred technique when analyzing capital investments. The ARR still stands very popular among practitioners (Groppelli and Nikbakht, 2000; Thakor, 1993; and Winicur, 1993).

The Ghana Stock Exchange (GSE) is one of the principal components of the Ghanaian financial market where corporate institutions made up of banks, manufacturing, insurance, mining, brewing and petroleum firms get listed. It was incorporated in July 1989 but began trading in 1990. Criteria for firms wanting to get listed on the exchange include capital adequacy, profitability, spread of shares, years of existence and management efficiency. Also, with the discovery of oil in Ghana, the growing interest of multinational firms as well as domestic firms to

get listed is high. This stems from the recognition that, both the stock market and banking sector stand to play pivotal role in attracting foreign direct investment (FDI) in the wake of the oil discovery in the country. Moreover, with the current high cost of bank loans in the country, the stock market becomes a prefer platform for raising needed capital for investment financing. The question that readily comes to mind thus is to what extent are listed firms employing standard capital budgeting tools to assess the viability of projects for which huge amounts of money is being spent on. More specifically, do listed firms employ theoretical investment appraisal concepts in their investment decision making? Solutions to this and other enquiries will inform the larger public curiosity and interest. This would further highlight the application of theoretical concepts in capital investment decision making and their relevance to modern day businesses and investors looking for firms that seek to maximize the value of their investments by utilising them projects that are viable. It would further expose the finance theory-practice gap. Additionally, to the best of our knowledge, no empirical study has been done in Ghana that investigated the current issue. The rest of the paper is organised as follow: section 2 is devoted to empirical literature review; section 3 provides analytical framework and discussion of results while section 4 concludes discussions and provides recommendations.

2.0 Empirical Literature

Existing evidence in empirical literature indicates wider applications of capital budgeting practices both in developed and developing economies. In Australia, McMahon (1981) and Freeman and Hobbes (1991) explored extensive range of issues on capital budgeting; such as how firms ranked the importance of capital budgeting techniques, which capital budgeting techniques were used and how discount rates were determined. The findings of these studies indicated that the Discounted Cash Flow (DCF) appeared to be growing favourite techniques. In their study, Freeman and Hobbes (1991) found that 75% of respondents used NPV and 72% of respondents used IRR. Both studies found weighted average cost of capital (WACC) as the most relied on proxy for discount rate. Kester et al. (1999) indicated that most Australian firms mostly relied on DCF as well as capital asset pricing model (CAPM).

In a study conducted by Arnold and Hatzopoulos (2000) on UK companies, the DCF techniques were dominant techniques used by those firms. In particular, ninety-six percent of the respondents used either NPV or IRR techniques. In another UK survey, McLaney et al. (2004) found that the CAPM was the most popular model used in estimating the cost of capital, but only 47% of companies surveyed used the CAPM compared to the 73% reported in a similar work by Graham and Harvey (2001). In addition, McLaney et al. (2004) revealed that 53% of UK companies used the WACC for project appraisal and 67% took tax effects into account when estimating the cost of capital. In their study on four European nations, Brounen et al. (2004) indicated that the level of usage of capital asset pricing model (CAPM) was lower compared to the findings from other countries which were done by Kester et al. (1999) and Graham and Harvey (2001). However, they found payback period more popular among the capital budgeting techniques than the IRR and NPV methods.

In international comparison, Payne et al. (1999) compared the capital budgeting practices of US and Canadian firms and found that DCF methods were dominant in both countries. However, with respect to calculating firm's cost of capital, they found WACC more popular in the US than in Canada, and Canadian managers seemed to rely more on personal judgement and experience than did their US counterparts. Though the DCF enjoyed popular acclamation by practitioners, academic text books like Brealey et al. (2005) documented several limitations of DCF techniques such as: the failure to account for the value created by flexibility in management decisions, and the problem of applying a constant discount rate over the life of a project.

Klammer (1972) attempted a critical comparison of the capital budgeting practices in the U.S. The study showed that in 1959, based on a sample of 184 large U.S. firms, 19 per cent used DCF methods as their primary method to evaluate projects. Majority of the firms used either payback period (34%) or accounting rate of return (34%) as their primary method of evaluation. With the passage of time, Hendricks (1983) found that in U.S, 76 per cent of the firms in his sample reported they used DCF methods as their primary tool while 11 per cent used the payback period method as their primary tool. Furthermore, Trahan and Gitman (1995) reported that, most U.S firms used DCF methods as their primary evaluation tool, although these methods were more important for the large (88 per cent for NPV and 91 per cent for IRR) than for the small firms (65 and 54 per cent for NPV and IRR respectively). Again, Chen and Clark (1994) indicated from a study on US manufacturing businesses, that the use of PBP was strongly linked to the extent to which managers believe that accounting profits are important to the way in which their performance is assessed. Payback tends to favour projects that will generate fairly high operating cash flows and therefore profits in the short term. Arguably, payback seeks to identify less risky projects. It ignores risk associated with planned sales and cost but focuses on probability risk that project may end prematurely.

Furthermore, Farragher, Kleiman, and Sahu (1999) in a mail survey of capital investment practices of US-based companies in the Standard and poor's Industrial Index found discounted cash flow measures as the most popular

primary evaluation techniques, and that their usage had increased over time. Similar evidences were reported with regards to the use of capital budgeting techniques by firms in developing economies. For instance, in India, Pandey (2002) surveyed capital budgeting practices of selected medium to large sized companies in India and found that all the companies, except one, used the payback. The reason given in support for the popular usage of the PB method was its simplicity to use, not difficult to understand, early recovery of investment and its focus on risk (Pandey, 2002). However, the DCF techniques were found difficult to understand and use.

In Africa, a study carried on the Nigerian Stock Exchange (NSE) by Oyedotun (1980) indicated most of the firms in Nigeria used the payback period (50%); combination of methods (25%) and average rate of return (25%), while only 5% of the companies used the internal rate of return. Furthermore, the study indicated that all the firms adopted at least one or more methods in appraising capital projects. A similar study done by Falusi (1983) who selected 60 manufacturing firms out of which 45 were listed on the Nigerian Stock reported that forty (40) out of the forty five (45) quoted companies selected used the Net Present Value (NPV) method, while the payback period was used by the remaining quoted companies as well as non-quoted companies. Another by Olarenwaju (1999) showed that most of listed firms in Nigeria used the ARR and PBP (above 55%) in evaluating their capital expenditure plans.

Additionally, Andrews and Butler (1986) conducted similar investigation on the utilisation of capital budgeting techniques in South Africa based on 132 responses out of 500 companies. Their findings show that larger firms tended to employ more sophisticated capital budgeting techniques such as the DCF techniques. Hall (2000) further added similar evidence on South Africa with 65 respondents out of a total population of 300. Du Toit and Pienaar (2005) also found that firms that undertake relatively large capital expenditures tend to prefer the IRR and the net present value (NPV) method. Recent studies have identified risk assessment and incorporation into capital budgeting decision making process crucial. Parry and Firer (1990) in that recognition found that 18 per cent of their respondents had no response to any technique, but that 61 per cent sometimes or often used sensitivity analysis. In a similar study by Hall (2001), 25 per cent of the larger firms did not use any formal risk adjustment technique. In his study, sensitivity analysis was also found to be the most popular and it was used by 40 per cent of the larger firms that responded. Other more complicated risk assessment tools that can also be considered are decision trees, simulation (including Monte Carlo simulation) and real option analysis. The above exposition on the utility of the various capital budgeting techniques show that, in spite of the limitations associated with the DCF methods, it appears to have won the heart of many managers from the above evidence.

3.0 Analytical Framework

This study is an exploratory and descriptive survey study. The data collected for this study is primary data gathered with the aid of administered questionnaire. This was simply due to the qualitative and descriptive nature of the study. The sample included 8 staff from eight companies (2 banking, 1 brewery, 2 manufacturing, 2 distribution and 1 insurance firm), out of twenty companies that received the administered questionnaires. The questionnaire focused on demographic characteristics, cost of capital, capital budgeting techniques, capital structure and the relevance of the techniques to the firms. In order to solicit for the relevant information concerning the subject matter of this survey, non-probability approach was adopted. In particular, purposive sampling for the officers (staff) of the finance units of the listed firms was used. This technique is adopted because it is expected that the selected staff at the finance units of the respective firms possess relevant knowledge about capital budgeting techniques. Also, the choice of the sample size was influenced by the fact that only few firms responded to the questionnaires.

3.0.1 Analysis and Discussions of Empirical Results

Respondents Decision Making and Company Profile

The unique position occupied by the respondents could to some extent influence the choice of usage of a particular capital budgeting tool. Also, position or level of occupation in any career is usually associated with some kind of knowledge and expertise relevant to that post. It is therefore relevant in this study to explore the decision making role associated with the financial controllers of the selected firms. Table 1.0 provides that the respondents' decision making is either based on recommendations with respect to the kind of techniques to be used or in some instance recommendation is followed by authorisation. This may be possibly due to the need to circumvent some bureaucratic procedures usually associated with capital budgeting process. Majority 3(37.5%) have worked with their respective firms within 4-7 years whereas only one person constituting 12.5% worked for the one year. Again, given that most of the respondents have served in their respective firms for a considerable number of years, it may be expected that their knowledge about the subject matter for this study should be undoubted.

Table 1.0 Respondents Decision Making and Firm Profile

Response		Percentage
Role in Decision Making	Recommendation	50
	Partly recommendation and full authority	50
Duration with the Firm	Up to 1yr	12.5
	1-3yrs	25
	4-7yrs	37.5
	>10yrs	25
Sectorial Distribution of Firms	Banking	25
	Brewery	12.5
	Distribution & Trading	25
	Manufacturing	25
	Insurance	12.5
Size of the Firms	1-50people	12.5
	51-150people	12.5
	151-300people	12.5
	300-500people	12.5
	>500 people	50
Capital Base of Firms	<20 GHC	37.5
	100-200GHC	12.5
	50-100GHC	37.5
	>500GC	12.5

Source: Field Data (2012)

With regards to the sectorial distribution and size of the firms, Banking, Distribution and Trading and Manufacturing sector dominates the list while the largest firm in the sample employees over 500 people. It is expected that these firms will demonstrate the usefulness of capital budgeting techniques. Also, three firms have capital base of less than 20 million Ghana cedis (\$10.5million at current exchange rate of GHC1.89/\$) while the highest is between GHc10-GHC100million.

Table 2.0 Application of Capital Budgeting Techniques

	Technique	%
Tools of Capital Budgeting in Practice	NPV	62.5
	ARR	12.5
	NPV, ARR & IRR	12.5
	NPV, IRR, ARR & PI	12.5
Cost of Capital/Discount rate	Na	12.5
	WACC	50
	cost of equity capital	12.5
	A measure based on past experience	12.5
Cashflow Basis of Evaluation	Others	12.5
	Before Tax Cashflow	50
	After Tax Cashflow	50
Risk Assessment Tools Used	Scenario Analysis	25
	Sensitivity Analysis	12.5
	Break Even	25
	Scenario, Sensitivity & Break Even	37.5

Source: Field Data (2012), Na implies no response. NPV (Net Present Value), ARR(Accounting Rate of Return), IRR(Internal Rate of Return), PI(profitability Index) and WACC(Weighted Average Cost of Capital).

The key issues regarding the application of capital budgeting techniques are summarised in the table 2.0. The findings show that the appropriate capital budgeting tools used by the selected listed firms on the Ghana Stock Exchange are NPV, ARR and various combinations such as NPV in conjunction with ARR, IRR and PI.

Majority 5(62.5%) of the respondents show strong preference for the use of NPV which is consistent with existing studies (Trahan and Gitman (1995). It also shows that at least one of the investment appraisal methods is being used by listed firms on Ghana Stock exchange. Furthermore, this result shows that financial managers of listed firms in Ghana understand the application of capital budgeting tools which is indicative of a reduction in the theory practice gap. Another implication from the findings from the table above is that, financial managers have notified the given merits and demerits associated with each technique and thus seek to utilise a combination of NPV and other techniques to ascertain the true worth of an investment.

Bennouna et al (2012) noted that the choice of appropriate cost of capital is crucial in the computations of discounted cash flow analysis. According to Brigham and Ehrhardt (2002), companies are expected to use the weighted average cost of funds from various sources including debt, preferred stock and common equity. The cost of capital is thus the weighted average cost of capital (WACC). Though the findings from the table above shows that majority 4 (50%) of the firms make use WACC appropriately, there are others who still theoretically employ incorrect approach as past experience. This findings is similar to that of Jog and Srivastava (1995) and Payne et al. (1999) who find that a large number of firms employed theoretically incorrect methods (such as the cost of debt or past experience) to determine the discount rate. Only one (12.5%) makes use of cost of equity. This may mean that the firm is financing investment by the use of equity capital only.

With respect to the decision as to whether the after or before tax cash flow should be used, the findings from this study provide that half of the firms surveyed in this study use after tax cash flow while others also use before tax cash flow. This shows that there is no uniformity in the approaches being adopted by the listed firms. After tax cash flow is the appropriate one to be used. Bennouna et al (2010) and Brigham and Ehrhardt (2002) pointed out that, effective capital investment decisions making require more than the use of DCF techniques, proper cash flows, and discount rate estimates. They advised that, it also include risk analysis. Towards that end, several methods have been developed; ranging from sensitivity analysis, probability analysis, break even analysis and scenario analysis. This study shows that, majority 3(37.5) seem to prefer a combination of risk assessment tools, perhaps to ensure to risk profile of any investment project. Others prefer break even, scenario or sensitivity analysis. This again demonstrates the awareness of managers of listed firms with respect to various uncertainties likely to affect the entire project life.

Table 3.0 Rankings of the Appraisal techniques

	Important	Moderately Important	Very Important	Not Applicable	Not Important
NPV	3 (37.5%)		4(50%)	1(12.5%)	
IRR	4(50%)	2(25%)		2(25%)	
MIRR				3(37.5%)	5(62.5%)
PI	3(37.5%)	2(25%)		3(37.5%)	
ARR	4(50%)			4(50%)	
EVA	2(25%)	2(25%)	2(25%)	2(25%)	
PBP	3(37.5%)		4(50%)	1(12.5%)	
DPBP	5(62.5%)			3(37.5%)	

Source: Field Data (2012). Source: Field Data (2012), Na implies no response. NPV (Net Present Value), ARR (Accounting Rate of Return), IRR(Internal Rate of Return), PI(profitability Index) and WACC(Weighted Average Cost of Capital).

This study further goes on to explore how important are the various investment appraisal techniques to listed firms. The significance of these techniques to some extent would determine their usage but not just knowledge alone about them. The findings from the table 3 show that, 50% and 37.5% of respondents rated the NPV as very important and important respectively. This again underscores the popularity of the NPV as one of the major tools used by the firms since it is regarded as a potential technique that maximise shareholders wealth. This result is consistent with the findings of McMahon (1981), Lilleyman (1984), Freeman and Hobbes (1991) and Kester et al (1999) discussed earlier in the literature. The discounted payback period (DPBP) was ranked by (62.5%) by majority of the respondents as important while the modified internal rate of return (MIRR) was adjudged by majority (62.5%) as not important. However, the results show that the listed firms are quite comfortable with the internal rate indicated by 50% of respondents as important.

The profitability index (PI) and accounting rate of return (ARR) seem to provide inconclusive results. Whereas 37.5% of respondents consider PI as important, the same percentage considers it as not applicable and when 50% regard the ARR as important, the same percentage regards it as not applicable. This implies that, whereas the DCF methods seem to have gained acceptance and popular applicable by listed firms, other techniques do not seem to match up to that level of appreciation and usage by the listed firms on the GSE.

The attractiveness of the NPV, PBP, DPBP and IRR identified in this study has led to investigate the decisions underlying the choice of employment. Most of the respondents did not provide any reason to support their choice

of use for most of the techniques except for the use of NPV and IRR. Some of the reasons given to justify the popular use of the NPV against the others relate to the fact that it is easy to use and widely acceptable tool that considers time value of money (especially the NPV), and finally the NPV and IRR are considered the appropriate method for all major investment projects because they are closely related and again, both are time-adjusted measures of profitability and their mathematical formulas are almost identical which are suitable for financial institutions and their products.

4.0 Conclusion and Policy Recommendations

The importance of capital budgeting cannot be over emphasised. It is a fact that the success of any firm depends on its ability to identify business investment opportunities within the market. However, it is also very important to determine whether the identified opportunities will actually add value and be profitable to the firm before financial commitments are made. This study is an investigation into the application of capital budgeting techniques and practices for managerial decision making by listed firms; an attempt to see how theory applies in practice. The findings of this research are clear and in line with finance theory and generally consistent with other studies. The theory practice gap seems to be on the decline. The study find that firms listed on the GSE adopts text book capital budgeting techniques in practice. Most the firms use NPV, PBP, DPBP and IRR. However, some of the firms have not adopted the used of modified internal rate of return (MIRR), and the Accounting rate of return (ARR) as their decision making tool for capital budgeting. It is clear that the firms mainly apply DCF capital budgeting methods (NPV and IRR) due to their simplicity and widely accepted recognition. For policy making, listed firms should encourage expert training on the capital budgeting tools, especially other alternative tools aside the NPV which are time tested and proven useful. Training should also be organised to properly educate on cash flow basis of computing capital budgeting, inflation and standard tools in risk assessment given the volatile macroeconomic nature of developing economies like Ghana. This would enable advance assessment and forecast of project viability.

REFERENCES

- Arnold, G.C and Hatzopoulos, P. D. (2000): The theory-practice gap in capital budgeting: evidence from United Kingdom. *Journal of Business Finance and Accounting*, 27(5): pp. 603–626
- Bennouna, K. Geoffrey G. Meredith, Teresa Marchant, (2010), "Improved capital budgeting decision making: evidence from Canada", *Management Decision*, Vol. 48(2) pp. 225 - 247
- Bierman, H., (1993). Capital budgeting in 1992 : A survey. *Financial Management*, Vol. 22 No. 3, p. 24
- Brealey R. and S. Myers (2003). *Principles of Corporate Finance*, New York, NY, McGraw-Hill/Irwin.
- Brealey, R., Myers, S. & Allen, F. (2005), *Principles of Corporate Finance*, McGraw-Hill, New York
- Brealey, R.A. & Myers, S.C. (2003). *Principles of corporate finance*. 7th edition. New York:
- Brounen, D., De Jong, A. and Koedijk, K. (2004), "Corporate finance in Europe: confronting theory with practice", *Financial Management*, Vol. 33 No. 4, pp. 71-101.
- McGrawHill.Brigham, E. F. & Ehrhardt, M. C. (2007) *Financial Management: Theory and Practice*, 12th Edition, Thompson Southwestern.
- Chen,S.,Clark, R.L.,(1994).Management Compensation and payback method in capital budgeting: A path analysis. *Accounting and Business Research*, 24(94), pp. 121–132.
- Cotton, W.D.J. and Schinski, M. (1999). Justifying capital expenditures in new technology: A survey. *Engineering Economist*. 44(4): pp.362-376.
- Falusi, J. M. (1983), *Capital Budgeting Techniques in Practice*, *Management Accounting Journal*, May edition, pp.19-25,
- Farragher, E. J., Kleiman R.T., and Sahu A.P.(1999), "Current Capital Investment Practices". *The Engineering Economist*, 44 (2) 1999, pp.137-150
- Freeman, M., Hobbes, G. (1991), "Capital budgeting: theory versus practice", *Australian Accountant*, Vol. 61 No.8, pp.36-41.
- Gropelli, A.A., and Nikbakht, E. (2000). *Finance*. Hauppauge, New York: Barron's Educational Series, Inc., pp. 596
- Hendricks, John A. (1983). "Capital Budgeting Practices Including Inflation Adjustments: A Survey", *Managerial Planning*, Vol. 31, No. 4, pp.22 -28
- Klammer, Thomas P. (1972), "Empirical Evidence on the Application of Sophisticated Capital Budgeting Techniques", *Journal of Business*, 45, 3, pp. 387-397.
- Kurfi A.K. (2003): *Principles of Financial Management*, Kano.Benchmark Publishers Ltd PP148
- Larcker, D. (1983). The association between performance plan adoption and corporate capital investment. *Journal of Accounting and Economics*, 5, pp.3–30.
- Larcker, David F. (1983) "The association between performance plan adoption and corporate capital

- investment." *Journal of Accounting and Economics*, 5: pp.3-30.
- McLaney, E. (2006). *Business Finance: Theory and Practice* 6th Edition. Pearson Education, UK
- McLaney, E., Pointon, J., Thomas, M and Tucker, J. (2004). Practitioners' perspectives on the UK cost of capital. *European Journal of Finance*, 10: pp.123–138
- McIntyre, A.D. and Coulthurst, N.J. (1985) *Theory and practice in Capital Budget*. British Accounting review, pp. 24-70.
- McMahon, R. (1981). The determination and use of investment hurdle rates in capital budgeting: a survey of Australian practice. *Accounting and Finance*, 21, 15–35.
- Neale, C.W. and Holmes, D.E.A. (1991) *Post-Completion Auditing*. (London: Pitman).
- Olarenwaju, J.O. (1999), Application of Investment Appraisal Techniques among Small Scale and Medium size Companies in Lagos State, *ICAN Student journal* April/ June 2002
- Olowe R.A (1998), financial management; concept, analysis and capital investment; Bierly Jones Ltd Lagos
- Oyedotun, J. (1980), Project Evaluation Techniques in Nigeria, *Management in Nigeria, The Journal of Nigeria*, October edition pp 32 – 35.
- Pandey, I.M. (2002), *Financial Management*, Vikas Publishing House, New Delhi.
- Payne, J.D., Heath, W.C., & Gale, L.R. (1999), "Comparative financial practice in the US and Canada: capital budgeting and risk assessment", *Financial Practice and Education*, Vol. 9 No.10, pp.16-24.
- Pike and Neale (2006). *Corporate Finance and Investment Decisions & strategies*, 5th Edition. Pearson Education Limited, UK
- Pike, R. H. and Wolf, M. (1988). *Capital budgeting in the 1990s* (Chartered Institute of Management Accountants).
- Pike,R.H. (1996). A longitudinal survey of capital budgeting practices, *Journal of Business Finance and Accounting*, 23, (1) pp.79 – 92.
- Pike,R.H. (1996). A longitudinal survey of capital budgeting practices, *Journal of Business Finance and Accounting*, 23 (1), pp. 79–92.
- Thakor, A.V. (1993). "Corporate Investments and Finance," *Financial Management* 22(2), pp. 135-149.
- Van Horn, James, C., and Wachowicz, John M. Jr., (2009) *Fundamentals of Financial Management*, 13th edition, FT / Prentice Hall, Harlow, England.
- Winicur, B. (1993). *Capital Investment Analysis*. *National Public Accountant* 38(8):6-8.

APPENDIX QUESTIONNAIRE

This study seeks to investigate capital budgeting practices in managerial decision making for listed firms on Ghana Stock Exchange. It is purely an academic exercise and your views will be treated with utmost confidentiality. Your response is very crucial in this research. Please take some time off your busy schedules and **circle or tick where applicable, the following**.

Demographic Information

Company's Name	
Responding Person's Name	
Respondent's Position (Title)	
Educational Qualification	
Contact Number	
E-mail	
Date	

1. What is your role in decision making?

- Recommending decision to higher management
- Fully authorized to take decisions
- Partly (a) and Partly (b)

2. How long have you been in this firm? (Please Tick any one)

- Up to 1 year 1 to 3 years 4 to 7 years 8 to 10 years More than 10 years

3. Company's business falls in the following sector:

- | | |
|---|---|
| <input type="checkbox"/> Banking | <input type="checkbox"/> Non-Banking Financial Services |
| <input type="checkbox"/> Brewery | <input type="checkbox"/> Consumer Goods |
| <input type="checkbox"/> Distribution and Trading | <input type="checkbox"/> Food |
| <input type="checkbox"/> Manufacturing | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Insurance | <input type="checkbox"/> ICT |
| <input type="checkbox"/> Agro Processing | <input type="checkbox"/> Pharmaceuticals |

4. Number of people working in the company are:

- 1 – 50 1 – 150 151 – 300 300 – 500 Over 500

5. Company's current Paid-Up Capital (in Millions of GH¢) is:

- Less than 20 20 – 50 50 – 100
 100 – 200 200 – 500 More than 500

6. Please mark the Capital Budgeting tools/techniques used by your company:

- | | |
|--|---|
| <input type="checkbox"/> Net Present Value (NPV) | <input type="checkbox"/> Payback Period (PP) |
| <input type="checkbox"/> Internal Rate of Return (IRR) | <input type="checkbox"/> Modified Internal Rate of Ret (MIRR) |
| <input type="checkbox"/> Accounting ROR (ARR) | <input type="checkbox"/> Profitability Index (PI) |
| <input type="checkbox"/> Others (Please Specify) _____ | |

7. What cost of capital rate/discount rate do you use in case you use a technique involving discounted cash flows?

- | | |
|--|---|
| <input type="checkbox"/> Not Applicable | <input type="checkbox"/> Cost of Debt |
| <input type="checkbox"/> Cost of Equity Capital | <input type="checkbox"/> A measure based upon past experience |
| <input type="checkbox"/> Weighted Average Cost of Capital | |
| <input type="checkbox"/> Risk Free Rate + Risk Premium based on judgment regarding your risk class | |
| <input type="checkbox"/> Others (Please Specify) _____ | |

8. Kindly specify the cash flow that you use in your analysis.

- Before-Tax Cash Flow After-Tax Cash Flow

9. Do you make use of different Capital Budgeting Technique for different classes of Risk?

- Yes No

10. Indicate the risk assessment tool you use.

- Scenario analysis
 Sensitivity
 Break Even
 Simulation
 Decision trees
 Certainty Equivalence

11. If you are an MNC, capital budgeting decisions are made:

- Independently by the local management

- With approval of the Regional Head quarters
- A combination of both of the above

12. Indicate the significance of each capital budgeting technique used by your company

Technique	Not applicable	Not important	Moderately Important	Important	Very important
NPV	<input type="checkbox"/>				
IRR	<input type="checkbox"/>				
MIRR	<input type="checkbox"/>				
PI	<input type="checkbox"/>				
ARR	<input type="checkbox"/>				
EVA	<input type="checkbox"/>				
PAYBACK	<input type="checkbox"/>				
DISCOUNTED	<input type="checkbox"/>				
PAYBACK	<input type="checkbox"/>				
OTHERS	<input type="checkbox"/>				

13. What informs your decision to use any of the following capital budgeting techniques?

- NPV.....
- IRR.....
- MIRR.....
- PI.....
- ARR.....
- EVA.....
- PAYBACK.....
- DISCOUNTED PAYBACK.....

14. On what basis do you assess the riskiness of a project?

- Ignore risk and use single standard for all projects
- Based on subjective judgment
- Probability distribution of project's projected cash flow
- Covariance of Project's cash flow with cash flows of other projects
- Probability of loss
- Others (Please Specify) _____

15. How do you assess the impact of change in riskiness of a project?

- Shortening the required payback period
- Raising the required payback period
- Raising the discount rate in computing present value
- None of the above

16. Do you periodically review cost of capital?

Yes No

17. How often does your company review its cost of Capital Estimates?

- Quarterly
- Semi-Annually
- Annually
- Whenever there is new project to be evaluated
- Whenever there is a significant change in business environment

18. The periodic cost of capital review involves, estimating:

- Opportunity cost of Equity
- Cost of Debt only

19. Which of the following do you use to calculate cost of equity?

- CAPM
- Dividend discount model theory
- CAPM with risk factors
- APT (Arbitrage Pricing Theory)
- Risk free rate plus a judgmental risk premium

20. Do you add a premium for unique risk (Company or Project- specific risk), to the cost of equity?

Yes No

21. Which of the following valuation method do you use for firms?

- FCF (DCF)
- P/E MULTIPLIER
- NAV
- FCF (TO EQUITY)
- EVA
- Average Period Return
- Dividend Growth Model

Thank You

This academic article was published by The International Institute for Science, Technology and Education (IISTE). The IISTE is a pioneer in the Open Access Publishing service based in the U.S. and Europe. The aim of the institute is Accelerating Global Knowledge Sharing.

More information about the publisher can be found in the IISTE's homepage:

<http://www.iiste.org>

CALL FOR JOURNAL PAPERS

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. There's no deadline for submission. **Prospective authors of IISTE journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> The IISTE editorial team promises to review and publish all the qualified submissions in a **fast** manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Recent conferences: <http://www.iiste.org/conference/>

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

