Abstract
This work examined the techniques of capital budgeting available to SMEs and their relationship with risk management. The survey research design was used with a sample population of one hundred (100) SMEs in the Lagos metropolis. We found that there is a relationship between capital budgeting and profitability on one hand and capital budgeting and risk management on the other hand. It was recommended that SMES should endeavour to collect adequate and current data on various investment opportunities with a view of incorporating risk and uncertainly in their project analysis. In
addition, all members of staff should be carried along at each stage of the capital budgeting process.

There is apparent absence of agreement in the literature as to what constitutes a small medium scale Enterprises (SME)

There is no single criterion for classifying a business unit as small or medium scale industry. The terms small, medium or large are relative and differ from industry to industry, country to country and there is no unique or universally accepted definition of these terms (Obitayo, 1991).

Also (Jegede, 1990) opines that small and medium are relative term and that there is no unique international or national definitions of small or medium scale industries. Above all, it is important to realize that definition are time bound; in the sense that they change over a period of time, a fact recognized by (Ezeh, 1992) when he pointed out that what is today large business can pass for small business in future.

Small, and medium scale industries are those with annual turnover not exceeding N500,000 for merchant banks, small scale enterprise are those with capital investment not exceeding N2m or with maximum turnover not more than N5m. Federal Ministry of Industry in its guideline to Nigerian Bank for Commerce and Industry maintains that small scale Enterprise are those with total cost not more than N500,000 (excluding cost of land, but including working capital). The National Bank for Commerce and Industry (NBCI) in 1985, upgraded the amount to N750,000 with relevant conditions.

In Japan, the notion of a manufacturing plant with not more than 300 employees and investing less than 10m yen defines a small scale enterprise.

In U.S., various definitions of small scale enterprises abound but the widely acknowledged one was the one by the Small Business Act of 1953 which Provides that a small business is one that is independently operated and not dominant in the field of operation with an annual turnover of $2 to $7 million and employing 1500 employees or less (Hall, 1983).

In France, the most widely used and the most widely criticized definition is based on employment. They described artisans and very small enterprises as those with less than 10 employees, small enterprises as those having between 10-40 employees’ medium sized 50-500 employees and large enterprises over 500 employees.

In Denmark, small businesses are those with less than 49 employees with the large ones having more than 200 employees. Denmark has only 400 firms that meet the large business definition.
In Indonesia, any establishment that is not using any motive force or machinery and at the same time employing less than 10 full-time workers qualified as a small-scale venture. Italy adopts an upper limit of 500 workers in a manufacturing plant, which as it were, does not exhibit dominance of the market in its line of business.

**Performance Indicators of SMEs**

The performance indicators include:
- Profitability
- Sales Turnover
- Liquidity
- Return on investment
- Market share and size.

**Literature Review**

Capital budgeting involves all investments in long-term projects. It is the process of selecting alternative long-term investment opportunities. It is the process of committing the company’s funds into long term project. These projects would normally have life spans exceeding one accounting period (Akinsulire, 2006).

It usually involves substantial expenditures on new assets. These decisions are particularly important because the firm loses much of its flexibility by locking into projects and because capital budgeting decisions define the firm’s strategic direction. Pandey, (2006) defined capital budgeting as “a process of facilitating decisions covering expenditure on long term asset”

Bolarinwa (2007) contends that capital budgeting involves long term projects in anticipation of making profits.

The techniques of capital budgeting can be divided into two broad categories viz: traditional techniques which are earnings-based and the discounted cash flow (DCF) techniques which are cash flow based (Omolumo, 2003)

1. **Traditional Methods of Investment Appraisal Include**
   a) Payback period
   b) Accounting rate of return

2. **Discounted Cash Flow Techniques are**
   a) Net present value
   b) Internal rate of return
   c) Profitability index

**Conditions Under Which Capital Budgeting Decisions are Made**

Literature has provided that basically, there are three (3) conditions under which capital budgeting decisions are made namely:
A) **Condition of Certainty**
This is a situation in which project are appraised based on the assumption of the availability of perfect information (Omolumo, 2003).

B) **Condition of Risk**
The relevance and pervasiveness of risk, as a factor to be considered in capital budgeting, cannot be over-emphasized. What then is risk? Decision making under risk involves the specification of the consequence of a particular decision with knowledge of the probability associated with every possible outcome (Ekwere, 2004). Investing companies must take risks by investing funds in projects and ensure that these funds are invested based on probabilities.

C) **Condition of Uncertainty**
Uncertainty is a situation where the future outcome cannot be predicted with any degree of confidence from the knowledge of past or existing events, so that no probability estimates are available. The techniques of appraising projects under this condition are largely the same as under condition of risk.

**Techniques of Evaluating Capital Budgeting**
According to Ekwere (2004), there are four methods used in evaluating risk through: payback period, risk-adjusted discount rate, sensitivity analysis and certainty equivalent.

A) **Pay Back Period with Time Limit**
The payback period can be used to reduce the risk of a capital project by applying a payback time limit which is setting maximum payback period for a project before it can be accepted. For instance, a company guideline might be not to accept a project unless it pays back within say three (3) years of its being operational. The two ways of applying a payback time limit include:
I. Expecting a project to pay back within a certain time limit and in addition shows a positive NPV.
II. Expecting a project to pay back in discounted cash flow terms within a certain time period.

B) **Risk-Adjusted Discount Rate**
Ekwere (2004) provides that recent survey of capital budgeting techniques indicate that the simple and well-known procedure of adjusting the discount rate is the most popular method of allowing for risk.
It involves raising the hurdle rate if the discounted – rate –of-return method is used or discounting cash flows with a higher rate if the net present value method is used. It is instructive to mention that determining how much to increase the discount rate for different types of risk is a difficult task.

The adjustment to the risk-free cost of capital by way of addition is called risk premium, which reflects the attitude of investors toward risk and this vary with the riskiness of the project (Olowe, 1997). Therefore the discount rate that will be used in evaluating future cash will be a sum of the risk-free rate and risk premium. The formula representing risk adjusted discount rate is indicated below:

\[
\text{NPV} = \sum_{t=1}^{N} \frac{A_t}{(1 + k_A)^t}
\]

Where:
- \( k_A \) = the risk adjusted discount rate
- \( R_f \) = risk free rate
- \( P \) = risk premium

**c) Sensitivity Analysis**

According to Shambe (2005), sensitivity analysis is a “systematic analysis of possible extent of risks and uncertainties and helps to highlight their effects on firm’s operations. This method allows for risk by varying the values of the key factors (example sales volume, price, rates of inflation, cost per unit) and showing the resulting effect on the project. This will enable management to establish which of the factors affect the project most.

Projects are sensitive to changes in four principal areas: Prices, delay in implementation, cost over-run and yield.

**d) Certainty Equivalent**

The certainty equivalent approach is an alternative to the risk adjusted rate method, to incorporate risk in evaluating investment projects and overcomes some of the weaknesses of the latter method (Yusuf, 2001). Under the former approach, the riskiness of the project is taken into consideration by adjusting the expected cash flows and not the discount rate. Yusuf (2001) contends that this method eliminates the problem arising out of the inclusion of risk premium on the discounting process.

It involves reducing expected cash flow to its certain equivalent by determining what certain return the decision-maker would be willing to take in place of each year’s uncertain returns. After the certainty equivalent is computed for each year’s cash flow, the certainty equivalents are discounted using the default-free interest rate (risk-free discount rate) (Ekwere, 2004).
The formula for using the certainty equivalent approach with the NPV criterion is:

\[
\text{NPV} = Z \sum_{t=1}^{N} \frac{\alpha_1 A_t}{(1 + R_f)} A_0
\]

Where:
- \( \alpha_1 \) = certainty equivalent coefficient
- \( A_t \) = forecast cash flow at time
- \( R_f \) = risk free rate

The value of \( \alpha \) varies between 0 and 1 and it depends on the risk of the project.

**Research Methodology**

The research used the survey research design method. The population of the study comprised of managers of 100 small and medium Enterprises which cut across the Lagos metropolis. Questionnaires were distributed to the CEO’s of the selected 100 companies and 98 questionnaires were returned.

The statistical package for Social Sciences SPSS was used to calculate the mean, variance, standard deviation and skewness of the collected data. The hypotheses were tested using chi-square statistical tool.

**Test for Reliability**

**Cronbach- Alpha Test of Reliability Result**

<table>
<thead>
<tr>
<th>Case Processing Summary</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases Valid</td>
<td>38</td>
<td>38.8</td>
</tr>
<tr>
<td>Excluded(^a)</td>
<td>60</td>
<td>61.2</td>
</tr>
<tr>
<td>Total</td>
<td>98</td>
<td>100.0</td>
</tr>
</tbody>
</table>

\(^a\) Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.830</td>
<td>36</td>
</tr>
</tbody>
</table>

**Interpretation:** Cronbach-alpha test of reliability is an approach used in determining the ability of a study to measure accurately and dependably a research construct. Though Osuagwu (2002) recommends that a coefficient of 0.70 and above is acceptable. However, the coefficient of 0.83 makes the work reliable.
**Capital Budgeting and Risk Management...**

**Statement of Hypothesis**

a) \( \textbf{H}_0: \) There is no relationship between capital budgeting process and profitability.

\( \textbf{H}_1: \) There is no relationship between capital budgeting process and profitability.

\( \textbf{H}_0: \) Risk analysis management does not have an impact on project implementation.

\( \textbf{H}_1: \) Risk analysis management has an impact on project implementation. It is of note that

\( \textbf{H}_0: \) Indicates null hypothesis while

\( \textbf{H}_1: \) Indicates alternative hypothesis

**Test of Hypothesis**

**Hypothesis I**

\( \textbf{H}_0: \) There is no relationship between a capital budgeting process and profitability.

\( \textbf{H}_1: \) There is a relationship between a capital budgeting process and profitability.

**Case Processing Summary**

<table>
<thead>
<tr>
<th>Cases</th>
<th>Valid</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Percent</td>
<td>N</td>
</tr>
<tr>
<td>Does debt financing have the likelihood of increasing the profitability of your organisation through tax savings. * Does equity financing reduce the debt burden of your organisation and increase profitably?</td>
<td>97</td>
<td>99.0%</td>
<td>1</td>
</tr>
</tbody>
</table>

Source field survey, 2011

Does debt financing have the likelihood of increasing the profitability of your organisation through tax saving? * Does equity financing reduce the debt burden of your organisation and increase profitably? Cross tabulation
Does equity financing reduce the debt burden of your organisation and increase profitably?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Undecided</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does debt financing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>have the likelihood of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>increasing the</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>profitability of your</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>organisation through</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tax saving?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>62</td>
<td>4</td>
<td>1</td>
<td>67</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>undecided</td>
<td>3</td>
<td>2</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>69</td>
<td>11</td>
<td>17</td>
<td>97</td>
</tr>
</tbody>
</table>

Source field survey, 2011

9

Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>59.534</td>
<td>4</td>
<td>.000</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>56.311</td>
<td>4</td>
<td>.000</td>
</tr>
<tr>
<td>Linear-by-Linear</td>
<td>51.018</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Association</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>97</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 4 cells (44.4%) have expected count less than 5. The minimum expected count is 1.59.

Decision Rule

The test statistics of 59.534 with 4 degrees of freedom at 0.001 p-value is less than the decision criterion of 0.05, therefore the null hypothesis is rejected and the alternative hypothesis is accepted. Hence, there is a relationship between the capital budgeting process and profitability.

Hypothesis II

Ho: Risk analysis management does not have an impact on project management.
Hi: Risk analysis management has an impact on project management.
Case Processing Summary

<table>
<thead>
<tr>
<th>Cases</th>
<th>Valid</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Percent</td>
<td>N</td>
</tr>
<tr>
<td>Does risky project enhance the organisation profitability? * does attitude of the organisation towards risky project affects the organisation?</td>
<td>96 98.0%</td>
<td>2 2.0%</td>
<td>98 100.0%</td>
</tr>
</tbody>
</table>

Does risky project enhance the organisation profitability? * does attitude of the organisation towards risky project affects the organisation? Cross tabulation

Count

<table>
<thead>
<tr>
<th>Does attitude of the organisation towards risky project affects the organisation?</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>does risky project enhance the organisation profitability?</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
</tr>
<tr>
<td>undecided</td>
<td>6</td>
</tr>
<tr>
<td>11.00</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
</tr>
</tbody>
</table>

Chi-Square Tests

<table>
<thead>
<tr>
<th>Value</th>
<th>Df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>35.024^a</td>
<td>6</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>34.828</td>
<td>6</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>8.582</td>
<td>1</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>96</td>
<td></td>
</tr>
</tbody>
</table>
Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>35.024a</td>
<td>6</td>
<td>.060</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>34.828</td>
<td>6</td>
<td>.000</td>
</tr>
<tr>
<td>Linear-by-Linear</td>
<td>8.582</td>
<td>1</td>
<td>.003</td>
</tr>
</tbody>
</table>

N of Valid Cases 96

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is .21.

**Decision Rule**

The test statistics of 35.024 with 6 degrees of freedom at 0.060 p-value is greater than the decision criterion of 0.05, therefore the null hypothesis is rejected and the alternative hypothesis is accepted. Hence, risk has an impact on project evaluation.

**Discussion of Findings and Conclusion**

An appraisal of a capital budgeting process in SMEs, has revealed the overwhelming importance of capital budgeting system in SMEs especially as it affects performance indicators such as profitability, sales turnover, return on investment, liquidity, survival, net asset to mention but a few.

From the hypotheses that were tested, it can be concluded that:

I. There is a relationship between a capital budgeting process and profitability. The application of capital budgeting techniques enhances the profitability of

II. Risk analysis management has an impact on project implementation. This can be attributed to the fact that in making investment there is always an element of risk inherent in it. It means that in every investment decision or capital budgeting decision been made or capital budgeting process by small and medium scale enterprise is greatly influence by risk management.

**Recommendations**

In order to make capital budgeting process and decisions really result oriented especially in SMEs the under-itemized recommendations are hereby provided:

Firstly, there must be a recognized and pragmatic accounting practice in operation and existence and that this accounting practice should be computer-aided to ensure effectiveness and efficiency.

Secondly, a well-articulated capital budgeting system policy should be formulated and sound implementation framework should be provided. It was noticed
Capital Budgeting and Risk Management...

that not all small and medium scale enterprise have full knowledge of capital budgeting and the technique for appraising it. One of the ways of ensuring a sound implementation framework is to institute an effective monitoring procedure just as engagement of a competent financial manager is necessary.

Again, if SMEs are faced with paucity of capital, efforts should be directed towards ensuring available capital is effectively rationed among projects that promise more value to the organization.

In addition, all employees of the organization should be involved at each stage of capital budgeting process so that all capital project in the organization would be feasible.

Furthermore, it is recommended that SMEs should endeavour to collect adequate and current data on various investment opportunities with a view of incorporating risk and uncertainty in the projects being appraised.

References
Akinsulire, O. (2006); Financial management. Lagos; Cemol Nigeria


Jegede, C. A. & Bello, F. O. (2003); Principles of finance; Lagos; Walex Printer.

Jegede, C.H. (1990); The development of industries in Nigeria; 26, No 3, June, p. xxvi. Wallex Printer


