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**Capital Budgeting Practices:
A Study of Companies Listed on the Colombo Stock Exchange Sri Lanka**

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Abstract

In today's highly competitive business environment long-term capital investments have become a critical issue. Organizations are still making efforts to understand suitable capital budgeting techniques. The importance has been given to capital investment for the creation of shareholder wealth for individual firms. It is vital to investigate the practices used to evaluate the projects. The sample is selected from manufacturing; pharmaceuticals and chemicals, and textile sectors. The study is exploratory nature. Capital budgeting techniques i.e., Pay Back Period (PBP); Accounting Rate of Return (ARR); Net Present Value (NPV); Internal Rate of Return (IRR) and Profitability Index (PI) methods have been used as the techniques of capital budgeting. Finally, the results show that NPV method is the most dominant capital budgeting technique according to the perception of executives of all sectors. It has been found that the executives mostly prefer NPV and IRR methods of capital budgeting from the companies of the manufacturing, pharmaceutical and chemical sectors, whereas the executives of the textile sector prefer the NPV method for evaluating capital budgeting. Further, this study attempts to give a sector wise solution with the help of a model for capital budgeting practices.

Keywords: Capital Budgeting Practices; Investment Decisions and Colombo Stock Exchange.

1.Introduction

The importance has been given to capital investment for the creation of shareholder wealth for individual firms. It is vital to investigate the practices used to evaluate the projects. The internal rate of return (IRR) and net present value (NPV) have long been the accepted capital budgeting measures preferred by corporate management and financial theorists, respectively. While corporate management prefers the relevancy of a yield-based capital budgeting method, such as the IRR, financial theorists, based on orthodox economic theory, endorse the NPV method. Financial theorists have long stipulated conditions in which certain capital budgeting methods are superior to others. However, the violation of assumptions created in the theorist's conditions may significantly affect the consistency and superiority of the selected capital budgeting method.

In today's highly competitive business environment long-term capital investments have become a critical issue. Organizations are still making efforts to understand suitable capital budgeting techniques. Organizations are still unable to get proper feedback from their executives regarding capital budgeting techniques.

2.Literature Review

Ann Farragher & Leung (1987) stated that the results of a survey of the capital investment practices of larger corporations in Malaysia, Singapore and Hong Kong. The findings of the study are fairly consistent with those from similar U.S surveys (Gitman & Forrester, 1977). However, Malaysia, Singapore and Hong Kong companies seem to use multiple techniques, both simple and sophisticated, in evaluating investment projects (as cited in Rishi & Rao, 2005).

Babu & Sharma (1996) surveyed the different kinds of capital budgeting practices in Indian industry. Their survey found that more than ninety percent of the companies have been using capital budgeting methods. Further, most of the companies have been using discounting cash flow (DCF) methods. The popular investment appraisal methods are IRR and PBP. According to the Drury & Tayles (1997) capital budgeting practices in the United Kingdom (UK) and United States of America (USA) reveal a trend towards the increased use of more sophisticated investment appraisals requiring the application of DCF (as cited in Rishi & Rao, 2005).

The study by Farragher, Kleiman & Sahu (2001) attempts to measure the relationship between capital budgeting sophistication and business performance. It builds on earlier studies by utilizing a more comprehensive capital budgeting sophistication metric, incorporating industry-adjusted independent variables (firm size, risk, capital intensity and degree of focus), and by focusing on United States Corporations. The results are similar to those of earlier studies; there is no discernible relationship between capital budgeting sophistication and corporate performance (as cited in Rishi & Rao, 2005).

Graham & Harvey (2002) reported that chief finance officers (CFOs) said that they always or almost used a particular evaluation technique i.e., IRR and NPV. The survey was based on the responses of three hundred and ninety two CFOs. Another study conducted by Ehrhardt & Wachowicz (2006) found that according to recent surveys, most companies use DCF methods to evaluate capital budgeting decisions. DCF methods typically assume that a project's initial cash outlay (ICO) is known with certainty. A proper capital budgeting analysis should incorporate the additional risk that is due to an uncertain ICO. Sensitivity analysis is an effective way to address ICO risk, but the finance literature often overlooks the adjustments needed to satisfactorily address ICO risk within a sensitivity analysis (as cited in Rishi & Rao, 2005)

There are many researchers conducted in the field of capital budgeting. Most of the articles are concerned with the concerns of western countries, but no study is seen on the capital budgeting in Sri Lankan perspectives. Therefore, the authors took interest to somewhat cover this wide research gap. The study is undertaken to examine the capital budgeting practices of the listed companies of CSE in Sri Lanka.

3. Objectives

Following objectives are taken for the study.

1. To investigate industry/sector -to-industry/sector differences in capital budgeting techniques in selected units; and
2. To assess the efficiency of capital budgeting techniques in these units.

4. Hypotheses

The following hypotheses are formulated

H₀₁: There is no significant difference between the perception of the executives from companies of manufacturing; pharmaceutical and chemical; and textile sector regarding capital budgeting techniques.

H₀₂: There is no significant difference between the perception of the executives who have experience between ≥ 2 to < 10 years, from companies of manufacturing; pharmaceutical and chemical; and textile sector regarding capital budgeting techniques.

H₀₃: There is no significant difference between the perception of the executives who have experience between > 10 years, from companies of manufacturing; pharmaceutical and chemical; and textile sector regarding capital budgeting techniques.

5. Research Methodology

This section is divided into five sub-sections. The first sub-section presents the sample. In the sub-second section, data sources are discussed, whereas the last sub-section highlights mode of analysis.

5.1 The Sample

The sample method is purposive. The sample size consists ninety executives, selected from 14 companies from manufacturing (six companies); pharmaceutical and chemical (four companies) and textile companies (four companies) which are listed under the CSE in Sri Lanka. Further, the sample is bifurcated on the basis of sectors and experience. In the sample 42 executives there were those who had ≥ 2 to ≤ 10 years of experience, bifurcated into manufacturing (fourteen); pharmaceutical and chemical (fourteen) and textile sector (fourteen). In the sample of 48 executives there were those who had > 10 years of experience bifurcated into manufacturing (twelve); Pharmaceutical and chemical (eighteen) and textile sector (eighteen). The executives who had less than two years of capital budgeting exposure and who had not been members of the committee for capital budgeting had not been considered in the study.

5.2 Data Sources

The data were collected through a structured questionnaire. It consists of section-A and B. In section-A, independent questions have been asked i.e., name of the sector and experience of executives. In section-B, a question was asked in relation to preferred rank on five types of capital budgeting techniques i.e., PBP; ARR; NPV; IRR and PI.

5.3 Mode of Analysis

The data were analyzed according to a ranking method. Kendall's Coefficient of Concordance was used to test the hypotheses.

Table-1: Capital Budgeting Techniques

Variables	Explanations	Calculations
Pay Back Period (PBP)	It is simplest and, perhaps, the most widely employed, quantitative method for appraising capital expenditure decisions.	The PBP measures the number of years required for the CFAT to pay back the initial capital investment outlay, ignoring interest payment.
Accounting Rate of Return (ARR)	It is based upon accounting information rather than cash flows. There is no unanimity regarding the definition of the rate of return.	$\frac{\text{Average annual profits after taxes}}{\text{Average investment over the life of the project}} \times 100$
Net Present Value (NPV)	NPV may be described as the summation of the present values of cash proceeds in each year minus the summation of present values of the net cash outflows in each year.	It is calculated as the summation of the present values of (i) operating cash flow after taxes (CFAT) in each year and (ii) salvages value and working capital in the terminal year minus the summation of present values of the cash flows in each year.
Internal Rate of Return Method (IRR)	This method considers the time value of money by discounting the cash streams.	It is calculated as the discount rate(r) which equals the aggregate present value of the net cash flows.
Profitability Index (PI)	Another time-adjusted capital budgeting technique is profitability index (PI), it is similar to the NPV approach	PI measures the present value of returns per rupee invested, while the NPV is based on the difference between the present value of future cash flows and the present value of cash outlays.

6. Results

The capital budgeting techniques were analyzed and interpreted in two stages. Firstly, the results were calculated and secondly, hypotheses were tested.

6.1. Calculation of the Capital budgeting Techniques

Table-2: Status of the Executives' Perception Regarding Capital Budgeting Techniques

Techniques Sectors		PBP	ARR	NPV	IRR	PI
Over all Manufacturing Based Sector	Weight	76	86	61	69	98
	Rank	3	4	1	2	3
Manufacturing Sector Experience ≥ 2 to ≤ 10 years	Weight	46	44	29	37	54
	Rank	4	3	1	2	5
Manufacturing Sector Experience > 10 years	Weight	30	42	32	32	44
	Rank	1	4	2.5	2.5	5
Over all Pharamaceutical and Chemical Sector	Weight	91	106	88	88	107
	Rank	3	4	1.5	1.5	5
Pharamaceutical and Chemical Sector Experience ≥ 2 to ≤ 10 years	Weight	51	47	35	32	45
	Rank	5	4	2	1	3
Pharamaceutical and Chemical Sector Experience > 10 years	Weight	40	59	53	56	62
	Rank	1	4	2	3	5
Over all Textile Sector	Weight	80	121	81	111	87
	Rank	1	5	2	4	3
Textile Sector Experience ≥ 2 to ≤ 10 years	Weight	36	49	41	50	34
	Rank	2	4	3	5	1
Textile Sector Experience > 10 years	Weight	44	72	40	61	53
	Rank	2	5	1	4	3

Source: Survey data

Table-2 shows that the executives from the companies of manufacturing sector have given NPV as the most important capital budgeting technique, where as IRR; PBP; ARR and PI methods have been second to fifth rank (least important) as the capital budgeting techniques. [The executive having ≥ 2 to ≤ 10 years of experience in capital budgeting practices, in the companies of manufacturing sector have given most important capital budgeting techniques to NPV; IRR; ARR; PBP and PI method respectively. The executive having >10 years of experience in capital budgeting practices from the companies of manufacturing sectors have given most important to least important capital budgeting techniques to PBP; NPV and IRR (equally important) ARR and PI method respectively.]

Table-2 further shows that the executives from the companies of the pharmaceutical and chemical sector have given NPV and IRR as the most important capital budgeting technique, where as PBP, ARR and profitability index method have been rated third to fifth rank (least important) as capital budgeting technique. The executives having ≥ 2 to ≤ 10 years of experience in capital budgeting practices from the companies of the pharmaceutical and chemical sector have given most important capital budgeting techniques to PBP; NPV; IRR; ARR and PI method respectively.

According to the table-2 the executives from the companies of the textile sector have given PBP as the most important capital budgeting technique, whereas NPV; PI; IRR and ARR methods have been ranked fourth to fifth rank (least important) capital budgeting techniques. The executives having ≤ 10 years of experience in capital budgeting practices from the companies of the textile sector have given most important to least important capital budgeting techniques to PI; PBP; NPV; ARR and IRR method respectively. The executives having >10 years of experience in capital budgeting practices, from the companies of textile sector have given most important to least important capital budgeting techniques to NPV; PBP; PI; IRR and ARR method respectively.

6.2 Hypotheses testing

H_{01} and H_{02} are rejected at 0.01 and 0.05 level of significance whereas H_{03} is rejected at 0.01 and accepted 0.05 level of significance.

7. Discussion

The rejection of H_{01} shows that the overall perception of the executives of all three sectors is different. The results indicate that the perception of the executives of manufacturing and pharmaceutical and chemical sector is similar. It means the executives of both the sectors do not have a difference of opinion regarding capital budgeting techniques, whereas the executives from the companies of the textile sector have high degree of dissimilarities with the manufacturing, and pharmaceutical and chemical sector. This shows that the nature of the textile sector is entirely different from the other two sectors regarding capital budgeting practices.

The results also indicate that experience-wise perception of the executives is entirely different within sector. The rejection of H_{02} shows that the perceptions of the executives having experience ≥ 2 to < 10 years in all three sectors are not similar. The results also show that executives having ≥ 2 to < 10 years, experience are not able to decide the right capital budgeting technique and they are confused about deciding on it. One of the reasons may be inexperience. The results also show that H_{03} is accepted at 0.05 level of significance. It indicates that executives having > 10 years of experience have an almost similar perception. This shows that as experience increases, the understanding of capital budgeting increases. The H_{03} is rejected at 0.01 level of significance because the criterion of 0.01 is narrow; so it may be possible that executives may not have similar perceptions.

Finally, the result shows that NPV method is the most dominant capital budgeting technique according to the executives of all sectors. It has been found that the executives mostly prefer NPV and IRR methods of capital budgeting from the companies of the manufacturing, pharmaceutical and chemical sectors, where as the executives of the textile sector prefer the NPV method for evaluating capital budgeting. The findings of the study are supported by previous studies. Firstly, Gittman & Forrester (1977) [as cited in Rishi & Rao, 2005] showed that most of the firms use the NPV method for capital budgeting. Secondly, Graham & Harvey (2001) showed that executives are more likely to use NPV and, thirdly, Graham & Harvey (2002) showed that IRR has been the primary corporate criterion for evaluating investment projects.

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