

Measuring Impact of Capital Budgeting Techniques on the Financial Performance

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Abstract:

Capital budgeting is an essential procedure for firms to assess and choose long-term investment initiatives. By utilizing various techniques and methodologies, organizations can make informed decisions about which projects to pursue and allocate their financial resources effectively. In this document, we will explore the different capital budgeting techniques and their applications, providing insights into how businesses can strategically invest in projects that align with their long-term goals and objectives. The objective of this study is to analyse the impact of capital budgeting techniques on the financial performance of the cement industry in India. For this purpose, a Primary data was collected from 380 Accountant, Owner/director and Manager of cement companies of India. For the current research work multiple regression analysis was used and it was found that 6 variables Imp_CBT_2, Imp_CBT_8, Imp_CBT_7, Imp_CBT_6, Imp_CBT_3 and Imp_CBT_5 are forecasting how capital budgeting approaches would affect the financial performance of the cement sector in India.

Keyword: Capital Budgeting Techniques, financial performance, cement company, profitability, Replacement Decisions, Lease or Buy Decisions.

Introduction

Capital budgeting plays a critical role in the strategic decision-making process of businesses. It involves the allocation of significant financial resources towards long-term investment projects, which can have a substantial impact on the company's future performance and growth. The techniques used in capital budgeting help in identifying and evaluating the potential investment opportunities, considering factors such as risk, return, and the time value of money. One of the key aspects of capital budgeting is assessing the level of risk associated with each investment opportunity. Businesses need to consider factors such as market volatility, industry dynamics, and potential macroeconomic changes that could affect the success of a project. Integrating risk analysis into the capital budgeting process allows organizations to make

better choices and reduce possible financial losses.

The research aims of study is:

1. To analyse the impact of capital budgeting techniques on the financial performance of the cement industry in India.

Review of Literature

Sergi, D., Sari, I. U., & Senapati, T. (2022) revealed that Capital budgeting involves managing significant uncertainty stemming from the unpredictable nature of cash flow, interest rates, and duration estimates for future periods. Various fuzzy extensions of capital budgeting strategies have been suggested and used over a broad spectrum of scenarios to address uncertainty. This research introduces a novel fuzzy extension to commonly used capital budgeting methods. This material introduces interval-valued Fermatean fuzzy sets (IVFFSs) and specifies the algebraic and aggregation procedures for interval-valued Fermatean fuzzy (IVFF) numbers. The IVFF net present value, IVFF equivalent uniform yearly value, and IVFF benefit-cost ratio (B/C) methodologies are created. The suggested approaches are validated by illustrating proposed formulations with a hypothetical scenario and comparing the results with standard fuzzy capital budgeting strategies.

Lilian Chan, Y. C. (2004) revealed that Capital budgeting approaches are valuable instruments for municipal managers to manage organizational resources. A study on capital budgeting practices of Canadian municipal governments found that only a small number used capital budgeting methods. The payback period was more often employed than discounted cash flow analysis for assessing capital expenditures, and challenges were frequently encountered in its implementation. Specifically, there is a focus on quantitative/financial aspects rather than qualitative/intangible components. This paper introduces the analytic hierarchy process, a decision model that considers both physical and intangible factors, as a tool for improving resource allocation in local governments for capital budgeting choices.

Verbeeten, F. H. (2006) examines influence of uncertainty on the complexity of capital budgeting processes. Although

the theoretical uses of advanced capital budgeting practices, such as real option reasoning and game theory decision rules, are well-documented, there is limited empirical evidence on the factors influencing the significance and adoption of these practices. I study the connection between particular risks and advanced capital budgeting methods in 189 Dutch companies. The empirical findings indicate that advanced capital budgeting requires the use of many tools and techniques, including Monte Carlo simulations, certainty equivalents, Game Theory decision rules, and Real Option Reasoning. Financial uncertainty rising leads to the use and significance of advanced capital budgeting methods. Size and industry are factors that influence the use and significance of advanced capital budgeting strategies.

Du Toit, M. J., & Pienaar, A. (2005) reported on the The study findings focus on how firms listed on the main board of the JSE Securities Exchange SA really make capital investment decisions. The survey respondents shared information about their organizations' techniques for assessing capital investments and comparing mutually incompatible initiatives. South African enterprises tend to favor using the internal rate of return (IRR) and net present value (NPV) for assessing capital investments, as shown by the findings. Furthermore, there seems to be a link between the strategies used by corporations and the magnitude of their yearly capital expenditure. Respondents were provided with a fictitious scenario and asked to pick between two mutually incompatible initiatives. Most respondents selected the initiative that provided the least value, which is intriguing.

Pike, R. (1989) made an analysis of changes in specific capital budgeting processes over an eleven-year period across 100 major firms and their impact on improving investment decision-making. There were notable rises in the use of advanced methods, which were positively linked to managers' evaluations of the success of capital planning. The reasons behind these results are analyzed.

Sandahl, G., & Sjögren, S. (2003) Provided an overview of the current capital budgeting methodologies used by Swedish companies. The study is derived on a survey sent to 528 firms chosen from the top 500 Swedish enterprises

and some from the O-list of companies. The response rate is 24.4%. The research indicates that public sector enterprises use discounted cash flow (DCF) approaches most often. The payback approach is widely used across sectors and is influenced by the size of the organization. The use of the net present value approach has risen over time, whereas the employment of DCF methods has remained relatively constant. Listed firms have used value-based management methods. Another finding indicates that tradition has a significant role in determining the selection of capital budgeting approach. Major corporations in the manufacturing sector often use Discounted Cash Flow (DCF) approaches compared to other businesses. Overall, firms seem indifferent to the tax implications of capital planning choices. Public corporations seem to have not implemented capital budgeting techniques that promote improvements in shareholder value.

Bennouna, K., Meredith, G. G., & Marchant, T. (2010) Assessed contemporary methods in capital budget decision-making in Canada, such as real alternatives, and merged the findings with comparable past research. An extensive study was carried out including 88 major corporations in Canada. Despite the ongoing trend towards advanced methods, 17 percent of major enterprises did not use discounted cash flow (DCF). The majority preferred net present value (NPV) and internal rate of return (IRR). Between 10% to 33% of individuals were not successfully implementing certain components of DCF. Only 8% used tangible opportunities.

Block, S. (1997) revealed that Small company businesses have generated 80% of the new employment in the United States in recent times. Their approach to capital investment choices is crucial, while it remains relatively distinct from that of bigger corporations. Results from a study of 232 small businesses show that 42.7% of respondents favor the repayment technique as their strategy. Their time horizon often refers to the duration for which a financial institution will provide them with finance, unlike many bigger organizations. The average minimum payback duration in the study was 2.81 years, which is much shorter than the asset's useful life and suggests a greater necessary return than most businesses expect. The increasing adoption of

discounted cash flow methodologies at a rate of 27.6 percent is greater than what has been reported in surveys of smaller enterprises in recent decades.

Ahmed, I. E. (2013) revealed that many studies focus only on the use or lack of utilization of capital budgeting techniques, without delving into the variables that influence the choice of approach in the UAE or the surrounding area. The connections between use and independent variables influencing the choice of the approach have been examined. The research aims to address a gap in the current literature on capital budgeting practices in both developed and emerging countries. The research examines the questionnaire gathered from 35 out of the 61 firms listed in DFM. The survey discovered a significant amount of UAE enterprises who use capital budgeting methodologies when making capital investment choices. Most UAE firms often employ the methodologies PB, NPV, and IRR. The study found that various financial and nonfinancial factors impact the choice of capital budgeting technique, including company size, revenue, profitability, leverage, expenses, project familiarity, cash availability, and decision makers' education level. Substantial disparities were identified between the chosen procedures and the variables that impact the selection of the approach. Research has shown a favorable correlation between most financial elements and the approaches, but a negative correlation with the bulk of nonfinancial variables.

Schlegel, D., Frank, F., & Britzelmaier, B. (2016) aimed to investigate the processes and approaches used for investment decision-making in German manufacturing firms. The aim is to examine whether organizations' behavior aligns with finance and management accounting theory. A survey instrument was created after conducting a literature analysis that focused on the unique aspects of German management accounting procedures. The questions include both investment assessment methodologies and cost-of-capital. The questionnaire was sent via a web-based survey to a total of 65 businesses in the manufacturing industry in Germany. The sample firms mostly use the net present value (NPV) approach. Significant variations among organizations of varying sizes

are recognized. Smaller organizations often utilize single-period approaches like cost comparison, whereas bigger companies typically use multi-period methods.

Research Methodology

Primary data was collected from 380 Accountant, Owner/director and Manager of cement companies of India. All selected Accountant, Owner/director and Manager of Cement companies received a survey questionnaire as part of data collection process. Further the investment proposal measurement data is gathered from the primary data and about the company's investment data as secondary data from the cement company's website. Surveys were delivered to workers over a six-month period from August 2023 to January 2024. Out of 494 respondents contacted, only 380 replies were considered for data analysis owing to incomplete responses and other issues. The high response rate of 76.92% was achieved by consistent direct communication and reminders between

the Accountant, Owner/Director, Manager of the chosen cement firm, and the researcher. Multiple regression analysis was used for the present investigation.

Data Analysis

The significant variables need to be identified that shows the influence of capital budgeting methods on the financial results of the cement sector in India. For this purpose, the data gathered is analysed with the multiple regression technique with following hypothesis:

H0: There are no significant variables that have impact of capital budgeting technique on the financial performance of the cement industry in India.

H1: There are significant variables that have impact of capital budgeting technique on the financial performance of the cement industry in India.

The results of the hypothesis testing are presented as under:

Table-1: Multiple regression analysis for Impact of capital budgeting techniques

Descriptive Statistics									
Particular		SPSS code	Mean	SD	N				
The overall influence of capital budgeting approaches on financial performance is substantial.		Imp_CBT_1	2.6211	1.07432	380				
It improves the financial performance		Imp_CBT_2	2.7421	1.07100	380				
It improves future profitability of cement company		Imp_CBT_3	4.1263	1.04760	380				
It is good for Replacement Decisions		Imp_CBT_4	3.9447	1.21971	380				
It is good for Lease or Buy Decisions		Imp_CBT_5	4.0632	1.00459	380				
It is good for Mutually Exclusive Projects Decisions		Imp_CBT_6	4.1658	.97265	380				
It is good for Independent Projects Decisions		Imp_CBT_7	4.2553	.70849	380				
It is good for Contingent Projects Decisions		Imp_CBT_8	4.4395	.77154	380				
Correlations									
		Imp_CBT_1	Imp_CBT_2	Imp_CBT_3	Imp_CBT_4	Imp_CBT_5	Imp_CBT_6	Imp_CBT_7	Imp_CBT_8
Pearson Correlation	Imp_CBT_1	1.000	.681	.364	.276	.267	.212	-.105	.224
	Imp_CBT_2	.681	1.000	.467	.415	.452	.317	-.024	.115
	Imp_CBT_3	.364	.467	1.000	.844	.752	.730	.191	.359
	Imp_CBT_4	.276	.415	.844	1.000	.772	.795	.282	.402
	Imp_CBT_5	.267	.452	.752	.772	1.000	.745	.155	.322
	Imp_CBT_6	.212	.317	.730	.795	.745	1.000	.256	.546
	Imp_CBT_7	-.105	-.024	.191	.282	.155	.256	1.000	.383
	Imp_CBT_8	.224	.115	.359	.402	.322	.546	.383	1.000

Correlations									
		Imp_CBT_1	Imp_CBT_2	Imp_CBT_3	Imp_CBT_4	Imp_CBT_5	Imp_CBT_6	Imp_CBT_7	Imp_CBT_8
Sig. (1-tailed)	Imp_CBT_1	.	.000	.000	.000	.000	.000	.021	.000
	Imp_CBT_2	.000	.	.000	.000	.000	.000	.318	.012
	Imp_CBT_3	.000	.000	.	.000	.000	.000	.000	.000
	Imp_CBT_4	.000	.000	.000	.	.000	.000	.000	.000
	Imp_CBT_5	.000	.000	.000	.000	.	.000	.001	.000
	Imp_CBT_6	.000	.000	.000	.000	.000	.	.000	.000
	Imp_CBT_7	.021	.318	.000	.000	.001	.000	.	.000
	Imp_CBT_8	.000	.012	.000	.000	.000	.000	.000	.
N		380	380	380	380	380	380	380	380

Model Summary									
Model	R	R ²	Adj. R ²	SE	Change				
					R ²	F	df1	df2	Sig.
6	.729 ^f	.532	.524	.74103	.006	4.447	1	373	.036
a. Pre.: (Con), Imp_CBT_2									
f. Pre.: (Con), Imp_CBT_2, Imp_CBT_8, Imp_CBT_7, Imp_CBT_6, Imp_CBT_3, Imp_CBT_5									

ANOVA ^a						
Model	SS	df	MS	F	Sig.	
6	Regression	232.610	6	38.768	70.601	.000 ^g
	Residual	204.822	373	.549		
	Total	437.432	379			
a. DV: Imp_CBT_1						
g. Pre.: (Con), Imp_CBT_2, Imp_CBT_8, Imp_CBT_7, Imp_CBT_6, Imp_CBT_3, Imp_CBT_5						

Coefficients^a

Model	Unst. Coeff.		St. Coeff	t	Sig.	r			Coll. Stat.		
	B	SE	Beta			0-order	Partial	Part	Tol	VIF	
6	(Constant)	.675	.290		2.325	.021					
	Imp_CBT_2	.660	.041	.658	15.948	.000	.681	.637	.565	.736	1.358
	Imp_CBT_8	.366	.062	.263	5.868	.000	.224	.291	.208	.625	1.599
	Imp_CBT_7	-.258	.059	-.170	-4.396	.000	-.105	-.222	-.156	.838	1.193
	Imp_CBT_6	-.161	.072	-.145	-2.233	.026	.212	-.115	-.079	.296	3.377
	Imp_CBT_3	.204	.062	.199	3.296	.001	.364	.168	.117	.345	2.895
	Imp_CBT_5	-.139	.066	-.130	-2.109	.036	.267	-.109	-.075	.331	3.024
a. DV: Imp_CBT_1											

The regression results show that:

Adjusted R square=52.4 percent

DV= Imp_CBT_1

Predictors= Imp_CBT_2, Imp_CBT_8, Imp_CBT_7,

Imp_CBT_6, Imp_CBT_3, Imp_CBT_5

ANOVA(Model fit)=70.601

Sig.=.000g

Fitness: model is found fit for future.

Conclusion

As per the above result points it can be revealed that 6 variables Imp_CBT_2, Imp_CBT_8, Imp_CBT_7, Imp_CBT_6, Imp_CBT_3 and Imp_CBT_5 are the cement industry in India's financial performance using capital budgeting procedures.

The final Regression model with 6inDVs (Imp_CBT_2, Imp_CBT_8, Imp_CBT_7, Imp_CBT_6, Imp_CBT_3, Imp_CBT_5) explains almost 52.4% of the variance of variable that can significantly contributes the impact of capital budgeting techniques on the financial performance of the cement industry in India. Also, the restrictions and the regression coefficients are statistically significant at the 0.05 level. The F Ratio, a statistical measure of model fit, is provided by the ANOVA analysis. If Imp_CBT_1 (the DV) were to be predicted using the mean of the variables that were chosen, the squared error would be (437.432) times the total. Using the values of Imp_CBT_2, Imp_CBT_8, Imp_CBT_7, Imp_CBT_6, Imp_CBT_3, Imp_CBT_5 these errors can be reduced significantly. This reduction is deemed statistically significant with the F ratio of 70.601 and significance at level of 0.00g. With the above analysis it can be conclude that 6 variables i.e., It improves the financial performance (Imp_CBT_2), It is good for Contingent Projects Decisions (Imp_CBT_8), It is good for Independent Projects Decisions (Imp_CBT_7), It is good for Mutually Exclusive Projects Decisions (Imp_CBT_6), It improves future profitability of cement company (Imp_CBT_3) and It is good for Lease or Buy Decisions (Imp_CBT_5) crucially affects the financial performance of India's cement industry as a result of capital budgeting methods.

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