An empirical insight into the Capital Budgeting Practices in the Manufacturing Firms in Pakistan

Syed Sarmad Hasan
Accounting & Finance Department,
Institute of Business Management, Karachi, Pakistan

Dr. Nayeem ul Hassan Ansari
Accounting & Finance Department,
Institute of Business Management, Karachi, Pakistan

Dr. Bilal Ahmed Chishty
Accounting & Finance Department,
Institute of Business Management, Karachi, Pakistan

Prof. Dr. Anwer Irshad Burney
Director/Chairman,
College of Banking and Finance

Abstract
Capital Budgeting (CB) is a dynamic process deployed by organizations to identify financially appealing and profitable projects usually from an array of options. Capital Budgeting (CB) practices in Pakistan are under-explored and especially the role of non-financial factors in CB decisions is yet unclear. The purpose of this research is to explore the capital budgeting process in the manufacturing firms focusing on the obstacles these firms face and the nonfinancial factors firms used in their decision making. In this quantitative research data was collected from 52 manufacturing companies listed on the Pakistan Stock Exchange through a survey questionnaire adapted from previous studies. The survey was limited to the listed firms only which tend to be more organized hence the results might not reflect the reality of non-listed firms. Data were analyzed using simple statistical measures like mean, median, and standard deviation. The results show that payback period and net present value are the two most frequently deployed CBTs; whereas the newer technique like real options is seldom used. Firms perceive data forecasting as the main obstacle in deploying the CBT and consider the strategic importance of the project in its capital budgeting decisions. Our findings can help the firms in improving the quality of their CB decision-making by incorporating the non-financial factors. This research provides the initial results on which future researchers can build.
Keywords: Capital budgeting practices; Capital budgeting techniques; Capital budgeting decisions; Obstacles in capital budgeting; Nonfinancial factors in capital budgeting

---

An empirical insight into the   **Syed Sarmad Hasan**
Budgeting Practices in the Manufacturing   **Dr. Nayeem ul Hassan Ansari**
Firms in Pakistan   **Dr. Bilal Ahmed Chishti**
          Prof. Dr. Anwer Irshad Burney

Introduction:

Capital budgeting is a dynamic process deployed by organizations to identify financially appealing and profitable projects usually from an array of options (Nurullah and Kengatharan, 2015; Rossi, 2014). Capital budgeting (CB) decisions are taken seriously by firms as by definition CB involves large amounts of funds and ties it up for long periods (Alleyne et al., 2018). Quite often these decisions are irreversible thus increasing the opportunity cost of the decision significantly (Chittenden and Derregia, 2015); perhaps for the same reason, researchers have shown sustained interest in this area (Michelon et al., 2020). CB process is complex comprising of various sets of activities. Gitman (2009), divides the CB process into five stages: proposal generation, review & analysis, decision-making, implementation, and follow-up. Rossi (2014) sees decision-making as essentially a part of analysis hence suggests four stages of the CB process: project definition, analysis and selection, implementation, and review. Batra and Verma (2014) break up the project definition stage of Rossi into three separate stages and add consideration of nonfinancial factors in the CB process. They describe eight stages of CB as Strategic planning, project identification, Initial screening, CB technique selection, Qualitative factors identification, CB decision, Implementation, and Review.

All of the above-mentioned categorizations have their logic; Batra's classification while more detailed is an attempt to list down the steps in CB and not necessarily distinct stages. For this research, and also possibly for the use of future researchers, we propose that these eight steps may be grouped into three distinct phases based on the common nature of activities in these stages. These phases are:

- Planning Phase: Strategic planning, project identification, Initial screening
- Assessment Phase: CB technique, Qualitative factors identification, CB Decision
- Implementation Phase: Implementation, Review

Researchers interested in CB have largely focused on the assessment phase and within this phase, it is the identification of CB techniques that comprise most of the published literature on CB (Michelon et al., 2020). Other activities in the assessment phase such as identifying the qualitative factors influencing CB or the decision-making mechanism such as assigning weights to the outcomes of CB technique and other qualitative factors have essentially been ignored. The literature covering the activities in the planning phase of CB frequently omits direct reference to CB rather it uses keywords like "idea generation", "investment strategies" or "project planning". Similarly, Implementation phase activities are commonly published under project management literature with only a passing reference to CB.

Through extensive literature is available on what CB techniques firms use but not much is known about the obstacles firms face in deploying these CB techniques. Furthermore, only a few studies have looked into the qualitative or non-financial factors affecting CB decision (Al-Mutairi et al., 2018) and perhaps even fewer have examined the selection criteria firms use for accepting or rejecting a CB proposal. As these areas have not yet been adequately investigated, it is both useful

An empirical insight into the
Budgeting Practices in the Manufacturing
Firms in Pakistan

Syed Sarmad Hasan
Dr. Nayeem ul Hassan Ansari
Dr. Bilal Ahmed Chishti
Prof. Dr. Anwer Irshad Burney

and interesting to see how much importance is given to the results of CB techniques by the firms and what other factors are considered in taking the final CB decision.

The purpose of this research is to explore the CB activities in the Assessment Phase in its entirety by identifying which CB techniques firms in Pakistan deploy, the obstacles these firms face in deploying the CB techniques, the nonfinancial factors firms consider in making CB decisions, and finally finding out what factors influences the firms' final capital budgeting decisions. The remainder of this article is organized in four sections as follows: First, we review the pertinent literature to establish the existing knowledge on the research questions, next we describe the methodology adopted for this research which is followed by our findings and in the end, we discuss the findings and present a conclusion along with the contribution of this research.

Literature review:

How firms select a particular CB technique has received considerable attention from researchers in Pakistan and also elsewhere. Rossi (2014) reports that the size of the firm is correlated with the CBT a firm selects thus smaller firms selected simpler techniques of payback period more than the complex techniques like NPV or IRR which he found was preferred by the larger firms. One explanation could be that the smaller firms are less likely to have employees with specialized knowledge of finance to be able to use complex CBTs.

A review of published research relating to CB shows that large and medium-size firms across the globe are using the DCF based techniques, and of these, NPV is the most commonly used followed by IRR and PI (Bennouna et al., 2010; Gul et al., 2018; Nurullah and Kengatharan, 2015; Siziba and Hall, 2020). It doesn't mean that the firms have entirely abandoned the non-DCF techniques many mid-size and smallest firms continue to rely entirely on non-DCF techniques such as PB and ARR for their capital budgeting decisions (Alleyne, 2016; Khamees et al., 2010)). Bennouna et al. (2010), found that 17% of the large firms were not using any DCF technique. So, the non-DCF techniques despite their theoretical limitations are still frequently deployed by the firms for selecting capital investment projects. Many firms augment their CB decision process by additionally deploying DCF techniques such as NPV without dropping non-DCF techniques (Alleyne, 2016). Most firms use more than one technique before taking a final decision (Batra and Verma, 2017) suggesting that firms want to be sure that they are taking the best decision.

The trend in Pakistan shows that firms are adopting more refined techniques such as NPV, IRR, and MIRR (Farrukh et al., 2015). NPV is favored by highly leveraged firms in Pakistan whereas other firms showed partiality towards IRR (Zubairi, 2008). Later survey findings reported by Umair (2015) for Textile sector firms, Ishtiaq et al., (2017) for the manufacturing sector firms, and Mubashar and Tariq (2019) for firms listed at Pakistan Stock Exchange show a clear preference of the firms in Pakistan for NPV over other techniques. Zubairi (2008) says that firms with a higher P/E ratio prefer MIRR as compared to the firms with low P/E ratio tend to use IRR. This suggests that firms enjoying the market's confidence tend to use newer techniques, average firms deploy both new and traditional techniques but the struggling firms prefer to continue using more traditional methods. Sarwary (2020) reports that firms operating in stable markets and with a

An empirical insight into the　　　　　　　　　　**Syed Sarmad Hasan**
Budgeting Practices in the Manufacturing　　　　**Dr. Nayeem ul Hassan Ansari**
Firms in Pakistan　　　　　　　　　　　　　　**Dr. Bilal Ahmed Chishti**
　　　　　　　　　　　　　　　　　　　　　　　Prof. Dr. Anwer Irshad Burney

limited number of products deploying defender strategy know their environment so well that they tend to rely on simple CBT rather than using sophisticated CBTs. This is an interesting finding as it suggests that it is not just the expected factors like firm size or available skills but other elements such as how confident managers are about the market conditions or the overall strategy a firm uses that also significantly affects the choice of CBT.

Umair (2015) found that the textile sector firms in Pakistan use different CB techniques but the selection of the technique is not influenced by the size of the firm in terms of total assets or turnover. This particular study was limited to the firms in the Textile sector but a previous study (see Bester, 2006) also arrived at the same conclusion for a wider selection of firms in different sectors. It then opens up the question that if it is not the firm size then what characteristics of firms determine the selection of CB technique. Many studies have investigated the issue and one consistent answer literature provides is that the education level of CFOs is one key element determining the selection of CB technique in firms. Farrukh et al. (2015) demonstrated that lowly educated CFOs were unlikely to use more sophisticated techniques half of these were not using IRR or NPV. This finding is widely reported in the literature and a consensus is that professionally qualified CFOs are more inclined to use complex techniques such as sensitivity analysis, MIRR in addition to NPV (Alleyne et al., 2018; Brounen et al., 2004; Nurullah and Kengatharan, 2015).

Theoretical Background:

The gap between theory and practice in the field of capital budgeting is emerging as an area of great interest for researchers. Siziba and Hall (2020) note that recent studies show the increasing deployment of DCF based CB techniques by the firms which indicates some alignment of practice with finance theory though it doesn't prove that firms are grounding their practices on theoretical principles. On the other hand, new CB studies continue to report that firms are using simple CB techniques despite the theoretical superiority of more complex techniques. (Alleyene et al., 2018; Khamees et al, 2010).

Many consider this evidence of the gap between theory and practice but Chittenden and Derregia, (2013) challenge this view arguing that this conclusion illustrates the limited focus of researchers where they are looking only to find what CB technique firms are using and ignoring the process of how the firms take a final decision. This point is not without merit, practitioners may not be using the technical terms or the prescribed models but it is commonly seen that managers take decisions based on their understanding of the financial and non-financial factors. This is what Chittenden and Georgia (2013, p. 234) refer to when they suggest that "intuition underlying the observed practice is not at odds with theory, and …. the practical relevance of the option to wait is in line with theoretical predictions and simulations". Similarly, Kengatharan, (2016) also concluded that despite the increasing use of sophisticated capital budgeting techniques there are unexplained differences between capital budgeting theory and practice. The unexplained difference referred here points to the disparity in the case of the Real Option technique which is soundly grounded in theory yet is scarcely deployed by firms (Horn et al., 2015). Therefore, Siziba and Hall (2020) suggest conducting more studies to understand the disparity.

An empirical insight into the   **Syed Sarmad Hasan**
Budgeting Practices in the Manufacturing   **Dr. Nayeem ul Hassan Ansari**
Firms in Pakistan   **Dr. Bilal Ahmed Chishti**
                                                Prof. Dr. Anwer Irshad Burney

In summation, our review of previous studies reveals that capital budgeting continues to enjoy the global attention of researchers, yet the focus of attention over the years remains quite limited. Several gaps in CB literature are visible and need prompt attention. Lack of adequate empirical evidence is forcing researchers and practitioners to assume things rather than basing them on solid theory. Siziba and Hall, (2020) ask researchers to work on the decision-making phase of the CB process. Michelon et al., 2020) suggest that the readiness of managers to use sophisticated capital budgeting methods needs to be examined. Al-Mutairi et al. (2018) lament the shortage of empirical evidence on the nonfinancial factors included by firms in CB decision making and a lack of understanding of what obstacles are faced by firms in the deployment of CB techniques. This research responds to the above-mentioned gaps and examines what we call the Assessment Phase of the CB process.

Methodology:

Creswell (2009; 2016) suggests using quantitative methods for what and how questions. Therefore, keeping in view the nature of the research questions this research uses quantitative methodology. A survey method was adopted and a questionnaire was developed by adapting questions from previous studies (Al-Mutairi et al., 2018; Bennouna et al., 2010). Manufacturing companies by its very nature are more capital intensive and are required to make capital investment decisions frequently. Therefore, it was considered appropriate to target the manufacturing companies for this research. In June 2020, there were 558 companies listed on Pakistan Stock Exchange (PSX) out of which 365 fell under the manufacturing sector. Out of these 365 companies, it was found that 43 were inactive for various reasons and 11 were duplicate entries in the sense that PSX had listed the preferred shares and rights as separate entries in addition to the standard entry of ordinary shares of companies. Eliminating the inactive and duplicate entries the number of companies was reduced to 311. Efforts were made to locate the email addresses of the Heads of Finance and Chief Executive Officers through official websites of these companies and other platforms and were able to get information of 122 companies all of which were contacted through email.

The adapted questionnaire was pilot tested by distributing it to 5 manufacturing companies selected from the potential 122 companies through convenience sampling and the feedback received from these companies was used to simplify the language of certain questions. After refinement, the questionnaire was distributed to the remaining 117 companies which were accompanied by an explanatory letter describing the purpose of the survey and ensuring the respondents of complete confidentiality. After rigorous follow up usable response was received from 52 companies which constitute a 43% response rate which is considered acceptable.

Results:

SPSS was used to compute skewness and kurtosis of the data to determine the degree and direction of asymmetry of data and the presence of outliers. In all cases, skewness and kurtosis of data are found to be in the acceptable range of -1 to +1 (see Hair et al., 2017) suggesting that data distribution is moderately symmetrical and that there are no significant outliers.

Capital budgeting techniques deployed:

An empirical insight into the
Budgeting Practices in the Manufacturing
Firms in Pakistan

Syed Sarmad Hasan
Dr. Nayeem ul Hassan Ansari
Dr. Bilal Ahmed Chishti
Prof. Dr. Anwer Irshad Burney

The first question seeks to establish specifically which capital budgeting techniques are deployed by manufacturing companies in Pakistan when deciding to pursue a capital project. The result of the answers of respondents is presented in Table 1. The table demonstrates that the Payback method is by far the most commonly deployed technique and the Modified Internal Rate of Return is the least used technique. Analysis reveals that 89% of the firms use more than one technique and those which rely on just one technique always use the Net Present Value (NPV) method. This suggests that the Payback method although most commonly used is probably deployed as a complementary method by the firms.

NPV is the second most common technique with a high median of 4. This finding supports the observations of Farrukh et al. (2015), Gul et al. (2018), Zubairi (2008), and others that Pakistani firms commonly deploy NPV for capital budgeting decisions. As per our results in terms of frequency of usage, NPV is closely followed by Accounting Rate of Return (ARR) and Internal Rate of Return (IRR) with means of 3.48 and 3.31 respectively. We found that Profitability Index (PI) and Discounted Payback are only occasionally deployed by the firms whereas Real Options and MIRR are hardly used at all. These results are generally consistent with the earlier studies in the region (Islam and Shelly, 2016; Nurullah and Kengatharan, 2015; Batra and Verma, 2017) which reported that NPV, PB, and IRR are the most preferred techniques deployed by firms. However, our result suggests that newer and complex techniques such as MIRR and Real Options are rarely used.

Obstacles Faced:

The second question asks respondents to identify the obstacles they face in deploying the capital budgeting techniques. The result of the answers of respondents is presented in Table 2. Results indicate that difficulties in data forecasting and the time it takes to collect and process data are the two issues that firms in Pakistan face in the deployment of capital budgeting techniques.

Interestingly, findings indicate that cost or skill is not a significant hindrance for firms. This is in contrast with the findings by Al- Mutairi et al., (2018) who reported that the firms in Kuwait agreed with almost all obstacles suggested in the questionnaire including cost constraint, the uncertainty of outcomes, and management not being convinced of the utility of CBT. This variance in findings highlights the difference in perception of the firms in Kuwait and Pakistan about the obstacles they face in deploying CBTs. While the firms in Kuwait reported that they faced several obstacles with similar frequency, the firms in Pakistan overwhelmingly identified data forecasting and time constraints in using CBTs as a hindrance while maintaining that data reliability, lack of skill and un-convinced management are not common issues.

Nonfinancial Factors:

The third question asks about the nonfinancial factors that firms consider important enough to include in their CB decision-making process. More than 80% of firms reported that they either always or frequently take into account the strategic importance of capital projects in capital budgeting decisions. Furthermore, as shown in Table 3, respondents state that corporate image, employee skills, environmental impact, and social responsibility are also considered while deciding whether to implement the project or not. On the other hand, political aspects and

An empirical insight into the   **Syed Sarmad Hasan**
Budgeting Practices in the Manufacturing   **Dr. Nayeem ul Hassan Ansari**
Firms in Pakistan   **Dr. Bilal Ahmed Chishti**
                                          Prof. Dr. Anwer Irshad Burney

employee motivation appear to play an insignificant role in the CB decision process. The finding of the insignificance of employee motivation in CBD is at odds with the finding of Al-Mutairi et al. (2018) who reported that firms in Kuwait considered employee morale as a significant non-financial factor. This difference is explained by Chen (2008) who suggested the firms when making CBD consider different factors as per their current state and their desire to achieve a proper fit between the technique applied and the environment to which it is being applied. Perhaps it also reflects the difference in what firms consider as a substantial risk which can have a critical impact on the firm (Holmen and Pramborg, 2009).

Capital Budgeting Decision:

Question 4 explores the factors which influence the final capital budgeting decision of the firms. The result of the answers of respondents is presented in Table 4. Responses show that 80% of the firms always or regularly take the final decision on a capital project by using the results of CBT. This indicates that CB techniques are not just used by firms as a form-filling exercise but the output of the CB technique influences the final CB Decision. On the other hand, though 70% of firms always, regularly, or occasionally use qualitative factors, it seems this is done only to rule out those projects which could have unacceptable nonfinancial consequences and not for ranking the projects. Only 6% of firms disclosed that they never use CBT results even though they have used CBT in doing the analysis. Remarkably, the same firms purporting not considering CBT recommendations, without any exception, are the ones that report that the final decision in their firm is always influenced by the personal biases of the decision-makers. This suggests that in the firms where the personal biases of decision makers always intervene, it has a strong influence on the CBD so much so that the CBT recommendations are completely ignored. Though it is unclear if these personal biases result in the selection of financially unviable projects or that personal preference is exercised merely to change the ranking of only financially viable projects. In any case, this practice certainly leads to potential economic loss for the firm hence cannot be condoned.

Less than 15% of firms see anticipated large investment, irreversible nature of the decision, or gut feeling as having a significant impact. The finding that the irreversible nature of decision doesn't have a role in CB decision in firms is at odds with the findings of Chittenden and Derregia (2015) who reported that firms react to the presence of irreversibility by adjusting discount rates or delaying investment decisions. In contrast, our results show that 62% of the firms never or only rarely consider irreversibility as a factor. One possible explanation is that since the firms in Pakistan mostly rely on the ranking obtained through CBTs and also that they use multiple techniques for confirmation, the irreversibility aspect perhaps gets ignored under the assumption that using multiple techniques circumvents the problem. Firms' perception of agency relationship as an impacting factor for CBD is noteworthy as the responses present an almost perfect normal curve with 50% of firms thinking that it occasionally affects the final CBD decision, 26% firms consider it never or rarely affects the decision, and 24% firms believe it always or regularly impacts the CBD. The substance of this finding is that three-fourths of the firms surveyed consider agency relationships significant hence this needs further exploration.

Discussion & Conclusion:

An empirical insight into the   **Syed Sarmad Hasan**
Budgeting Practices in the Manufacturing   **Dr. Nayeem ul Hassan Ansari**
Firms in Pakistan   **Dr. Bilal Ahmed Chishti**
     Prof. Dr. Anwer Irshad Burney

This study focused on the capital budgeting assessment phase of the capital budgeting cycle. The objective of the study is to deepen the understanding of how the manufacturing firms in Pakistan deal with the Capital Budgeting's assessment phase i.e. deploying capital budgeting techniques, incorporating non-financial factors, and taking the final capital budgeting decision. Findings show that contrary to popular belief firms is continuing to use non-DCF techniques such as Payback Period and Accounting Rate of Return along, though firms also commonly use DCF techniques such as NPV. With this caveat we agree with the findings reported by Farrukh et al., (2015); Gul et al., (2018); Mubashar and Tariq, (2019); and Umair, (2015) that NPV is one of the most frequently used techniques by firms in Pakistan. Furthermore, our findings suggest that the more complex techniques like Real Options and MIRR are hardly used by these firms demonstrating that despite the theoretical soundness of these techniques firms have not yet adopted these techniques in Pakistan. This reluctance of firms to deploy the newer techniques needs further exploration. It is unclear if it is due to the lack of awareness or skill or for other reasons that Real Options though gaining popularity elsewhere (Baker et al., 2011; Horn et al., 2015; Ghahremani et al., 2012) has not attracted the firms in Pakistan.

Since the socio-political environment is not stable in Pakistan it is not surprising that the firms consider forecasting as the biggest obstacle in appropriately deploying CBTs. With the frequent change in government economic policies and taxation measures, it becomes difficult to predict with any reasonable accuracy the demand of products or supply of raw material or other input costs such as utility charges. Our results indicate that firms in Pakistan are certainly aware of the importance of the non-financial factors hence strategic importance of the project along with the company's image, environmental and social responsibilities are all regularly considered by the firms in CB decisions. However, employee motivation doesn't appear to be a priority consideration for firms in selecting capital projects for investment. If this has any implication on employees' ownership of the project is unknown and could be an area for future investigation.

Resources spent in deploying NPV and other CB techniques by the firms are justified by the fact that firms use the results of CB techniques in their final decision-making. Non-financial factors are also considered by firms but ostensibly only for eliminating non-viable projects and not for ranking the viable projects. Quality of decision-making can be enhanced by assigning weights to non-financial factors and making it more inclusive which could potentially help in reducing implementation risk and also may solve the problem of personal preferences affecting the decision-making process.

Research Contributions:
Our findings can help the firms in improving their capital budgeting processes by incorporating the non-financial factors in a more formalized manner in their decision-making process which may provide them with a better justification for selecting a specific project. Firms can build safeguards to ensure that personal biases are eliminated. Firms can also benefit by investing in learning theoretically sounder techniques such as Real Options which may lead them to better capital decisions. Academic institutions of higher learning can use our research results in updating their finance course outlines to incorporate new CB techniques and the consideration of non-financial factors in the capital decision-making process. This research investigated the issue using

An empirical insight into the
Budgeting Practices in the Manufacturing
Firms in Pakistan

Syed Sarmad Hasan
Dr. Nayeem ul Hassan Ansari
Dr. Bilal Ahmed Chishti
Prof. Dr. Anwer Irshad Burney

quantitative methodology. The results can be a motivation for the qualitative researchers to develop a theory explaining the reluctance of managers in using new methods.

References

Abushaban, M. B. (2013) *The use of capital budgeting techniques in selecting investment projects: An applied study on the Palestinian corporations working in Gaza Provinces*. Al-Azhar University-Gaza.

Agyei-Mensah, B. K. (2010) 'Financial management practices of small firms in Ghana: An empirical study, *SSRN Electronic Journal*, pp. 1–24. DOI: 10.2139/ssrn.1597243.

Al-Mutairi, A., Naser, K. and Saeid, M. (2018) 'Capital budgeting practices by non-financial companies listed on Kuwait Stock Exchange (KSE)', *Cogent Economics and Finance*, *6(1),* pp. 1–18. doi: 10.1080/23322039.2018.1468232.

Alkaraan, F. and Northcott, D. (2006) 'Strategic capital investment decision-making: A role for emergent analysis tools?. A study of practice in large UK manufacturing companies', *British Accounting Review*, *38(2),* pp. 149–173. doi: 10.1016/j.bar.2005.10.003.

Alleyne, P., Armstrong, S. and Chandler, M. (2018) 'A survey of capital budgeting practices used by firms in Barbados', *Journal of Financial Reporting and Accounting*, *16(4),* pp. 564–584. doi: 10.1108/JFRA-07-2017-0061.

Andor, G., Mohanty, S. K. and Toth, T. (2015) 'Capital budgeting practices: A survey of Central and Eastern European firms', *Emerging Markets Review*, *23*, pp. 148–172. doi: 10.1016/j.ememar.2015.04.002.

Andrés, P. de, Fuente, G. de and San Martín, P. (2015) 'Capital budgeting practices in Spain', *BRQ Business Research Quarterly*, *18(1),* pp. 37–56. doi: 10.1016/j.brq.2014.08.002.

Apap, A. and Masson, D. J. (2005) 'A survey of capital budgeting in publicly traded utility companies', *Southwest Business & Economics Journal*, *13*.

Arbeláez, H. (2004) 'Capital budgeting decisions: A survey of Latin American practices', *International Finance Review*, pp. 45–61. doi: 10.1016/S1569-3767(05)05004-1.

Baker, H. K., Dutta, S., and Saadi, S. (2011) 'Management views on real options in capital budgeting.', *Journal of Applied Finance*, *21(1),* pp. 18–29. doi: 10.2139/ssrn.1617927.

Baker, H. K., Jabbouri, I., and Dyaz, C. (2017) 'Corporate finance practices in Morocco', *Managerial Finance*, *43(8),* pp. 865–880. doi: 10.1108/MF-12-2016-0359.

Baker, J. C. (1981) 'Capital budgeting in West European companies', *Management Decision*, pp. 3–10. doi: 10.1108/eb001263.

Barjaktarovic, L. *et al.* (2016) 'Analysis of the capital budgeting practices: Serbian case', *Management - Journal for theory and practice of management*, *21(79),* pp. 47–54. doi: 10.7595/management.fon.2016.0009.

Batra, R. and Verma, S. (2014) 'An empirical insight into different stages of capital budgeting',

An empirical insight into the   **Syed Sarmad Hasan**
Budgeting Practices in the Manufacturing   **Dr. Nayeem ul Hassan Ansari**
Firms in Pakistan   **Dr. Bilal Ahmed Chishti**
                                            Prof. Dr. Anwer Irshad Burney

Global Business Review, 15(2), pp. 339–362. doi: 10.1177/0972150914523588.

Batra, R. and Verma, S. (2017) 'Capital budgeting practices in Indian companies', *IIMB Management Review*, *29(1),* pp. 29–44. doi: 10.1016/j.iimb.2017.02.001.

Bennouna, K., Meredith, G. G. and Marchant, T. (2010) 'Improved capital budgeting decision making: Evidence from Canada', *Management Decision*, *48(2),* pp. 225–247. doi: 10.1108/00251741011022590.

Bester, L. (2006) *An empirical study of capital budgeting evaluation techniques used in firms in the Nelson Mandela Metropole*. Nelson Mandela Metropolitan University; Faculty of Business and Economic Sciences.

Bukvič, V. (2016) 'Financial flexibility as one of the key factors that influence firm investment ability', in *Advances in Business-Related Scientific Research Conference*. Venice.

Cauwenbergh, A. *et al.* (1996) 'On the role and function of formal analysis in strategic investment decision processes: Results from an empirical study in Belgium', *Management Accounting Research*, *7(2),* pp. 169–184. doi: 10.1006/mare.1996.0010.

Champathed, K. (2015) 'Capital budgeting practice of Thai firms', *Information Management and Business Review*, *7(1),* pp. 59–66. doi: 10.22610/imbr.v7i1.1139.

Chan, H., Haddad, K., and Sterk, W. (2010) 'Capital budgeting practice of Chinese firms', 7(1986), pp. 59–66. Available at: http://www.jimsjournal.org/23 William Sterk.pdf.

Chazi, A., Terra, P. R. S. and Zanella, F. C. (2010) 'Theory versus practice: Perspectives of Middle Eastern financial managers', *European Business Review*, *22(2),* pp. 195–221. doi: 10.1108/09555341011023524.

Chen, S. (2008) 'DCF techniques and nonfinancial measures in capital budgeting: A contingency approach analysis', *Behavioral Research in Accounting*, *20(1),* pp. 13–29. doi: 10.2308/bria.2008.20.1.13.

Chittenden, F. and Derregia, M. (2015) 'Uncertainty, irreversibility and the use of "rules of thumb" in capital budgeting', *British Accounting Review*, *47(3),* pp. 225–236. doi: 10.1016/j.bar.2013.12.003.

Creswell, J. W. (2009) 'Research Design: Qualitative and mixed methods approach.', *London and Thousand Oaks: Sage Publications*.

Creswell, J. W. (2015) *30 Essential Skills for the Qualitative Researcher*. 1st edn. SAGE Publications, Inc.

Dağlı, H., Eyüboglu, K. and Sevim, U. (2013) 'Capital budgeting practices in foreign countries: the case of Turkish construction firms.', *Ataturk University Journal of Economics & Administrative Sciences*, *27(2),* pp. 93–108.

Dangol, J., Sthapit, A. and Rajbhandari, R. (2011) 'Capital budgeting practices in Nepali manufacturing companies', *PYC Nepal Journal of Management*, *4(1),* pp. 5–20.

An empirical insight into the
Budgeting Practices in the Manufacturing
Firms in Pakistan

Syed Sarmad Hasan
Dr. Nayeem ul Hassan Ansari
Dr. Bilal Ahmed Chishti
Prof. Dr. Anwer Irshad Burney

Daunfeldt, S.-O., and Hartwig, F. (2014) 'What determine the use of capital budgeting methods? Evidence from Swedish listed companies, *Journal of Finance and Economics*, *2(4),* pp. 101–112. doi: 10.12691/jfe-2-4-1.

Eljelly, A. M. A. and Abuidris, A. M. (2001) 'A survey of capital budgeting techniques in the public and private sectors of a less developed country (LDC): The case of the Sudan', *Journal of African Business*, *2(1),* pp. 75–93. doi: 10.1300/J156v02n01_05.

Elumilade, D. O., Asaolu, T. O. and Ologunde, A. O. (2006) 'Capital budgeting and economic development in the third world : The Case of Nigeria', *International Research Journal of Finance and Economics*, *2(2)*, pp. 136–152.

Ermasova, N. B. and Ermasova, P. (2019) 'Public capital budgeting and management process in Russia', in Srithongrung, A., Ermasova, N. B., and Yusuf, J.-E. (Wie) (eds) *Capital Management and Budgeting in the Public Sector*. Hershey, PA, USA: IGI Global, pp. 113–133. doi: 10.4018/978-1-5225-7329-6.ch006.

Farrukh, S., Areal, N. and Rodrigues, A. (2015) 'A cross-sectional comparison of capital budgeting practices in Pakistan', *International Journal of Innovative Science, Engineering & Technology*, *2(2),* pp. 431–437.

Ghahremani, M., Aghaie, A. and Abedzadeh, M. (2012) 'Capital budgeting technique selection through four decades: With a great focus on the real option', *International Journal of Business and Management*, *7(17),* pp. 98–119. doi: 10.5539/ijbm.v7n17p98.

Gil, N. (2007) 'On the value of project safeguards: Embedding real options in complex products and systems, *Research Policy*, *36(7),* pp. 980–999. doi: 10.1016/j.respol.2007.03.004.

Gitman, L. J. (2009) *Principles of managerial finance*. 12th edn. Pearson Prentice Hall (Prentice Hall finance series). Available at: https://books.google.com.pk/books?id=RGY7HwAACAAJ.

Gitman, L., and Vandenberg, P. (2000) 'Cost of capital techniques used by major US firms: 1997 vs. 1980', *Financial Practice and Education*, *10(2),* pp. 53–68.

Gul, S., Gul, H. and Haider, M. (2018) 'The review and use of capital budgeting investment techniques in evaluating investment projects: evidence from manufacturing companies listed on Pakistan Stock Exchange (Pse) 1 2 3', *City University Research Journal*, *8(2),* pp. 247–260.

Haddad, K., Sterk, W., and Wu, A. (2010) 'Capital budgeting practices of Taiwanese firms', *Journal of International Management Studies*, *5(1),* pp. 178–182.

Hair Jr, J. F. *et al.* (2016) *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.

Hall, J. H., and Mutshutshu, T. (2013) 'Capital budgeting techniques employed by selected South African state-owned companies', *Corporate Ownership and Control*, *10*(3 B,CONT1), pp. 177–187. doi: 10.22495/cocv10i3c1art2.

An empirical insight into the   **Syed Sarmad Hasan**
Budgeting Practices in the Manufacturing   **Dr. Nayeem ul Hassan Ansari**
Firms in Pakistan   **Dr. Bilal Ahmed Chishti**
                                                Prof. Dr. Anwer Irshad Burney

Hamdan, K. H. *et al.* (2019) 'Using a capital budget and sensitivity analysis to predict future cash flows and evaluate investment projects: Empirical study at Iraqi company for production, marketing and meat and field crops', *Journal of Engineering and Applied Sciences*, *14(2),* pp. 476–482. doi: 10.3923/jeasci.2018.10510.10516.

Hermes, N., Smid, P. and Yao, L. (2007) 'Capital budgeting practices: A comparative study of the Netherlands and China', *International Business Review*, *16(5)*, pp. 630–654. doi: 10.1016/j.ibusrev.2007.05.002.

Holmén, M. and Pramborg, B. (2009) 'Capital budgeting and political risk: Empirical evidence, *Journal of International Financial Management and Accounting*, *20(2),* pp. 105–134. doi: 10.1111/j.1467-646X.2009.01028.x.

Horn, A. *et al.* (2015) 'The use of real options theory in Scandinavia's largest companies, *International Review of Financial Analysis*, *41,* pp. 74–81. doi: 10.1016/j.irfa.2015.05.026.

Ibrahim, M. E. (2003) 'An exploratory study of capital budgeting practices in the United Arab Emirates', *J. for International Business and Entrepreneurship Development*, *1(1),* pp. 29–38. doi: 10.1504/jibed.2003.007805.

Imegi, J. and Nwokoye, G. (2015) 'The effectiveness of capital budgeting techniques in evaluating projects' profitability', *African Research Review*, *9(2),* pp. 166–188. doi: 10.4314/afrrev.v9i2.13.

Ishtiaq, M. *et al.* (2017) *Investment Decisions and Capital Budgeting Practices in Manufacturing Sector of Pakistan*, *Journal of Managerial Sciences*.

Islam, M. R., and Shelly, A. A. (2016) 'An overview of the capital budgeting techniques practiced by the companies of Dhaka Stock Exchange Limited', *Journal of Business Studies*, *37(1),* pp. 187–198.

de Jager, G. (2017) *Capital budgeting techniques employed by state-owned enterprises in Africa*. The University of the Witwatersrand.

Kadondi, E. A. (2002) *A survey of capital budgeting techniques used by companies listed at the Nairobi stock exchange*. The University of Nairobi.

Kengatharan, L. (2016) 'Capital budgeting theory, and practice: A review and agenda for future research, *American Journal of Economics and Business Management*, *3(2),* pp. 15–38. doi: 10.31150/ajebm.v1i1.5.

Kester, G. W. *et al.* (1999) 'Capital budgeting practices in the Asia-Pacific Region: Australia, Hong Kong, Indonesia, Malaysia, Philippines, and Singapore', *Financial Practice and Education*, *9(1),* pp. 25–33.

Khamees, B. A., Al-Fayoumi, N. and Al-Thuneibat, A. A. (2010) 'Capital budgeting practices in the jordanian industrial corporations', *International Journal of Commerce and Management*, *20(1),* pp. 49–63. doi: 10.1108/10569211011025952.

Kim, J. (2019) 'Capital management and budgeting practices in the Republic of Korea', in

An empirical insight into the   **Syed Sarmad Hasan**
Budgeting Practices in the Manufacturing   **Dr. Nayeem ul Hassan Ansari**
Firms in Pakistan   **Dr. Bilal Ahmed Chishti**
     Prof. Dr. Anwer Irshad Burney

Srithongrung, A., Ermasova, N. B., and Yusuf, J.-E. (Wie) (eds) *Capital Management and Budgeting in the Public Sector*. IGI Global, pp. 236–257. DOI: http://doi:10.4018/978-1-5225-7329-6.ch011.

Lakew, D. M. (2017) 'Planning and forecasting in capital budgeting: The practice of business organizations in Ethiopia', *International Journal of Scientific and Research Publications*, *7(3)*, pp. 241–252.

Lam, K. C., Wang, D. and Lam, M. C. K. (2007) 'The capital budgeting evaluation practices (2004) of building contractors in Hong Kong', *International journal of project management*, *25(8)*, pp. 824–834.

Lazaridis, I. T. (2004) 'Capital budgeting practices: A survey in the firms in cyprus', *Journal of Small Business Management*, *42(4)*, pp. 427–433. doi: 10.1111/j.1540-627X.2004.00121.x.

Leon, F. M., Isa, M. and Kester, G. W. (2008) 'Capital budgeting practices of listed indonesian companies', *Asian Journal of Business and Accounting*, *1(2)*, pp. 175–192.

Mahmoud, O. (2016) 'managerial judgment versus financial techniques in strategic investment decisions: An empirical study on the Syrian coastal region firms', *International Journal of Business, Economics and Management, 3(3)*, pp. 31–43.

Maquieira, C. P., Preve, L. A. and Sarria-Allende, V. (2012) 'Theory and practice of corporate finance: Evidence and distinctive features in Latin America', *Emerging markets review*, *13(2)*, pp. 118–148.

Markovics, K. S. (2016) 'Capital budgeting methods used in some European countries and the United States, *Universal Journal of Management*, *4(6)*, pp. 348–360. doi: 10.13189/ujm.2016.040604.

Michelon, P. de S., Lunkes, R. J. and Bornia, A. C. (2020) 'Capital budgeting: a systematic review of the literature, *Production*, 30.

Monteiro, F. (2020) 'Capital budgeting practices of the lodging firms. An evidence from Santa Cruz, Bolivia.', *Estudios y Perspectivas en Turismo*, *29(1)*, pp. 137–153.

Mubashar, A. and Tariq, Y. Bin (2019) 'Capital budgeting decision-making practices: evidence from Pakistan', *Journal of Advances in Management Research, 16(2)*, pp. 142–167. doi: 10.1108/JAMR-07-2018-0055.

Nurullah, M. and Kengatharan, L. (2015) 'Capital budgeting practices: evidence from Sri Lanka', *Journal of Advances in Management Research*, *12(1)*, pp. 55–82. doi: 10.1108/JAMR-01-2014-0004.

Obed, N. (2016) *The effect of capital budgeting on the growth of microfinance enterprises. A case study of Ugafode Mbarara*. Bishop Stuart University.

Pereiro, L. E. (2006) 'The practice of investment valuation in emerging markets: Evidence from Argentina', *Journal of Multinational Financial Management*, *16(2)*, pp. 160–183.

An empirical insight into the   **Syed Sarmad Hasan**
Budgeting Practices in the Manufacturing   **Dr. Nayeem ul Hassan Ansari**
Firms in Pakistan   **Dr. Bilal Ahmed Chishti**
       Prof. Dr. Anwer Irshad Burney

Rossi, M. (2014) 'Capital budgeting in Europe: confronting theory with practice', *International Journal of Managerial and Financial Accounting*, *6(4)*, pp. 341–356.

Samad, F. A., and Shaharuddin, R. S. (2009) 'The perception of risk and uncertainty and the usage of capital budgeting techniques: Evidence from public listed firms in Malaysia', *Jurnal Pengurusan*, *29,* pp. 3–14. doi: 10.17576/pengurusan-2009-29-01.

Sarwary, Z. (2020) 'Strategy and capital budgeting techniques: The moderating role of entrepreneurial structure', *International Journal of Managerial and Financial Accounting*, *12(1),* pp. 48–70. doi: 10.1504/IJMFA.2020.107001.

Selyukov, Y. N. *et al.* (2015) 'Methods of economic evaluation of alternative options of investment project in agricultural organizations of Belarus', *Экономические вопросы развития сельского хозяйства Беларуси: межведомственный тематический сборник*.

Shinoda, T. (2010) 'Capital budgeting management practices in Japan: a focus on the use of capital budgeting methods, *Economic Journal of Hokkaido University*, *39*, pp. 39–50.

Shirinov, N. *et al.* (2016) 'Application of fuzzy logic to capital budgeting decisions ; case study research, *Journal of Research in Business and Management*, *4(9),* pp. 76–79.

Siziba, S. and Hall, J. H. (2020) 'The evolution of the application of capital budgeting techniques in enterprises', *Global Finance Journal*. doi: 10.1016/j.gfj.2019.100504.

Soares, J. O., Coutinho, M. C. and Martins, C. V. (2007) 'Forecasting errors in capital budgeting: A multi-firm post-audit study', *The Engineering Economist*, *52(1)*, pp. 21–39. doi: 10.1080/00137910601159771.

Sosthenes, J. (2011) *Capital budgeting methods: theory versus practice: the case of companies listed in Dar es Salaam stock exchange.* University of Dar es Salaam.

de Souza, P. and Lunkes, R. J. (2016) 'Capital budgeting practices by large Brazilian companies', *Contaduria y Administracion*, *61(3),* pp. 514–534. doi: 10.1016/j.cya.2016.01.001.

Spickova, M. and Myskova, R. (2015) 'Costs efficiency evaluation using life cycle costing as strategic method', *Procedia Economics and Finance*, *34(15)*, pp. 337–343. doi: 10.1016/s2212-5671(15)01638-x.

Su, S.-H. *et al.* (2018) 'Application and effects of capital budgeting among the manufacturing companies in Vietnam', *International Journal of Organizational Innovation*, *10(4)*, pp. 111–120.

Truong, G., Partington, G., and Peat, M. (2008) 'Cost-of-capital estimation and capital-budgeting practice in Australia', *Australian Journal of Management*, *33(1),* pp. 95–121. doi: 10.1177/031289620803300106.

Tsamenyi, M. and Tauringana, V. (2004) 'Capital budgeting and budgeting practices of foreign operations in Uzbekistan : An Exploratory Study, *International Journal*, *21*, pp. 20–36.

Umair, N. (2015) 'Review of capital budgeting techniques and firm size', *Research Journal of Finance and Accounting*, *6(7),* pp. 106–113.

An empirical insight into the   **Syed Sarmad Hasan**
Budgeting Practices in the Manufacturing   **Dr. Nayeem ul Hassan Ansari**
Firms in Pakistan   **Dr. Bilal Ahmed Chishti**
     Prof. Dr. Anwer Irshad Burney

Vadeei, M. *et al.* (2012) 'An analysis and explanation of the relationship between techniques of capital budgeting and the performance of companies admitted to tehran stock exchange (Iran)', *Journal of Basic and Applied Scientific Research*, *2(7),* pp. 6420–6423.

Wnuk-Pel, T. (2015) 'Factors determining the selection of capital budgeting methods in companies operating in Poland', *Stowarzyszenie Księgowych tom*, *84*(140), pp. 217–240. doi: 10.5604/16414381.1173929.

Zubairi, H. J. (2008) 'Capital budgeting - Decision-making practices in Pakistan', *SSRN Electronic Journal*. doi: 10.2139/ssrn.1308662.

245

An empirical insight into the
Budgeting Practices in the Manufacturing
Firms in Pakistan

Syed Sarmad Hasan
Dr. Nayeem ul Hassan Ansari
Dr. Bilal Ahmed Chishti
Prof. Dr. Anwer Irshad Burney

Table 1: Capital Budgeting Techniques

CBT	Mean		Median	Std. Deviation
	Statistic	Std. Error	Statistic	Statistic
Payback Period	4.23	.118	4	.854
Net Present Value	3.67	.194	4	1.396
Accounting Rate of Return	3.48	.197	3.5	1.421
Internal Rate of Return	3.31	.193	3	1.394
Profitability Index	2.37	.167	2.5	1.205
Discounted Payback Period	2.15	.168	2.5	1.211
Real Options	1.42	.111	1	.801
Modified Internal Rate of Return	1.38	.083	1	.599

Table 2: Obstacles Faced in Deploying Capital Budgeting Techniques

Obstacles	Mean		Median	Std. Deviation
	Statistic	Std. Error	Statistic	Statistic
Forecasting data is difficult	3.60	.189	4	1.361
Time constraint	3.40	.149	3.5	1.071
Cost constraint	2.92	.157	3	1.135
Data is unavailable	2.87	.169	3	1.221
Uncertainty of CBT outcomes	2.73	.165	3	1.190
Available data is unreliable	2.71	.168	2	1.210
Lack of required skill level	2.52	.170	2	1.229
Management is unconvinced about utility of CBT	2.17	.169	2	1.216

An empirical insight into the Budgeting Practices in the Manufacturing Firms in Pakistan

Syed Sarmad Hasan
Dr. Nayeem ul Hassan Ansari
Dr. Bilal Ahmed Chishti
Prof. Dr. Anwer Irshad Burney

Table 3: Non-Financial Factors Considered by Firms in CBD

Factors	Mean		Median	Std. Deviation
	Statistic	Std. Error	Statistic	Statistic
Strategic importance	4.27	.146	5	1.050
Corporate image	3.98	.157	4	1.129
Employee skills	3.71	.159	4	1.143
Environmental impact	3.60	.170	4	1.225
Social responsibility	3.23	.175	3	1.262
Political aspects	2.88	.199	3	1.437
Employee motivation	2.40	.158	2.5	1.142

Table 4: Factors Influencing Final Decision

Factors	Mean		Median	Std. Deviation
	Statistic	Std. Error	Statistic	Statistic
CBT results are used to rank projects	3.96	.158	4	1.137
Use qualitative factors to rule out projects with unacceptable consequences	3.13	.174	3	1.253
Agency relationship	2.79	.141	3	1.016
Anticipated large investment needs in the future	2.62	.148	3	1.069
Irreversible nature of the decision	2.37	.132	2	.950
Personal biases of decision-makers	2.33	.142	2	1.024
Qualitative factors are used to rank projects	2.22	.162	2	1.014
The gut feeling of decision-makers	2.19	.163	2	1.172

An empirical insight into the Budgeting Practices in the Manufacturing Firms in Pakistan

Syed Sarmad Hasan
Dr. Nayeem ul Hassan Ansari
Dr. Bilal Ahmed Chishti
Prof. Dr. Anwer Irshad Burney