

# Challenges in Applying the DCF Method for Investment Property Valuation in Sri Lanka: Insights from a Delphi Study

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## Abstract

This study aimed to identify the challenges of implementing the Discounted Cash Flow (DCF) valuation method for investment properties in Sri Lanka. Through a mixed methodological approach involving the Delphi technique and structured interviews, insights were gathered from industry valuation experts via two Delphi rounds. The study's key findings were derived from the consensus reached among these experts, focusing on data- and valuer-bound factors. One of the primary challenges identified in the Sri Lankan context is the lack of training, which significantly hinders the knowledge and understanding required for implementing the DCF method effectively. Other significant hurdles included obtaining relevant data and accurately determining the discount rate. Imperfections in available data, the absence of a centralized digital data system, and challenges associated with increasing cash flows and market uncertainties also hindered the adoption of the DCF method in Sri Lanka. This study contributes to the existing DCF literature and provides valuable insights for practitioners and future researchers in the field of property valuation in Sri Lanka.

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*Keywords: DCF method of Valuation; Investment properties; Sri Lanka; Challenges; Delphi method*

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## Introduction

The International Valuation Standards Council (IVSC) defines Discounted Cash Flow (DCF) Method as "a method within the income approach in which a discount rate is applied to future expected income streams to estimate the present value". On that basis, economic uncertainty and high fluctuations have been widely evident in the recent decade across both developed and developing countries, including Sri Lanka (Haltiwanger, 2011; Rodrigo & Randika, 2022). Therefore, the general advocacy in recent years for valuing investment property somewhat favoured the DCF method (RICS, 2020). The arguments have been that the DCF method enables multiple probable cash flow scenarios weighted by their relative probability of occurrences, thus eventually capturing the market dynamics (Damodaran, 2019) and ensuring better valuation analysis transparency (Gleißner & Ernst, 2019). It is therefore accepted that a valuation analysis of investment property based on the DCF method would offer a "better" investment appraisal for investors, financial institutions, and developers to make informed decisions (Damodaran, 2002).

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Nonetheless, the general valuation practice across Sri Lanka highlights that DCF as a Valuation method is hardly applied to value investment properties. The industry's experiential knowledge (of ours) points out that Valuers in Sri Lanka have little awareness and agreement on how different parameters of the DCF method can be adopted within the context of Sri Lanka whilst ensuring consistency of the process. Unsurprisingly, developed and developing countries have faced challenges implementing the Discounted Cash Flow (DCF) method in property valuation practice. As noted by (Khakasa, 2009 cited(Wambua & Koori, 2018), challenges have resulted in low adoption rates of the DCF method in Nigeria. Its complexity took significant time through a prolonged process to adapt the DCF method in New Zealand more challenging, as discussed by (Levy & Amidu, 2021).

This paper aims to identify challenges in implementing the Discounted Cash Flow (DCF) method for valuing investment properties in Sri Lanka. As the first empirical investigation conducted in Sri Lanka, it adds context to the existing literature on DCF valuation. The study provides potential insights into the methodology of applying the DCF method specifically for investment property valuation, which is valuable for advancing valuation practices in Sri Lanka. Understanding the challenges for the DCF implementation is essential for finding solutions to enhance its adoption in valuing investment properties. Such improvements can attract local and foreign investors who rely on accurate valuation analyses incorporating future economic scenarios, unlike traditional methods based solely on historical data.

### **The Objective of the Study**

It is imperative to establish a reliable framework to ensure the generation of accurate results when utilizing the DCF approach. Therefore, this study aimed to identify the challenges of implementing the DCF valuation method for valuing investment properties in Sri Lanka.

### **Literature Review**

#### ***Investment Property and Discounted Cash Flow Method***

Rodney Hamrick, a real estate agent, said that income-producing properties are also known as investment properties. Further, he said that real property owned by an enterprise is not for its use but for investment potential or to gain income by leasing or letting it (Real Estate Agent, 2021). According to Sri Lanka Accounting Standards – LKAS 40, investment property defines as; Investment property is property (land or a building—or part of a building—or both) held (by the owner or by the lessee under a finance lease) to earn rentals or for capital appreciation or both, rather than for (a) use in the production or supply of goods or services or for administrative purposes; or (b) sale in the ordinary course of business (Sri Lanka Accounting Standard, n.d.). So, as this is an investment with huge risks, measuring the asset's value in a highly accurate manner is essential (Gang et al., 2020). Mainly because of this, it needs a valuation method to capture all the factors affecting the income. It should derive a detailed valuation so investors can thoroughly understand the property before investing. The "time value of money" is the theory that underpins discounted cash flow analysis which is the value of an asset today is simply the sum of all future cash flows discounted for the risk of earning them (FNRP, 2020). Further, IVSC defines DCF as "a method within the income approach in which a discount rate is applied to future expected income streams to estimate the present value" (2019).

#### ***Limitations of the DCF Method***

DCF valuation suffers from various analytical limitations, considering its relative simplicity and widespread acceptance. The accuracy of corporate free cash flow forecasts is one of the specific issues concerning when implementing the DCF (Blanc & Setzer, 2015; Jackowicz et al., 2017).

Additionally, selecting an appropriate discount rate to calculate the present value of future cash flows under conditions of uncertainty is a critical concern (Gollier and Weitzman, 2010; Mielcarz and Mlinarič, 2014). Another constraint arises from predicting interest rates accurately. Challenges also emerge in anticipating the composition of companies' financial sources, reflecting outstanding debt repayment plans, and predicting new debt repayment plans (Vlaovic-Begovic et al., 2013). Furthermore, implementing the DCF method necessitates numerous assumptions. Moreover, it focuses solely on business valuation and encounters difficulties in quantifying the terminal value, which constitutes a significant component of the overall value (Corporate Finance Institute, 2021). These limitations highlight the complexities inherent in applying the DCF method and underscore the need for careful consideration and accurate inputs to achieve reliable valuations.

### ***Challenges for Implementing the DCF Method of Valuation in Countries Which Have a Similar Market Context as Sri Lanka***

The DCF is the most commonly used method in Vietnam for assessing investment proposals, preceded by the Payback period and accounting rate of return, respectively (Su et al., 2018). In a 2009 study on valuation standards in Lagos State, Nigeria which is a low-middle-income country like Sri Lanka, it was discovered that 29% of respondents used the cost method to value residential/commercial properties, while a previous study in 1997 found that 63.3% of valuers in Lagos felt the cost method was more suitable for open market valuation in Nigeria (Babawale, 2009; Ogunba, 1997 cited (Omirin et al., 2016)). There can be seen a decreasing trend of using cost methods for valuing residential/commercial properties in Nigeria. The fact that cost basis is used for income-producing property justifies the need to investigate why DCF is not used, as it provides a better and theoretically more reliable method of calculating the value (Omirin et al., 2016). So, it reflects that Nigeria is also willing to implement the DCF valuation method instead of the cost method. The study in Nigeria has come up with several limitations in the market that act as barriers to the low adoption of the DCF method of valuation for valuing income-producing properties in Nigeria. Lack of demand from valuation clients was the key reason for the valuers' behaviour regarding DCF-based models in valuing investment property in Nigeria. The DCF models are not used and taught in universities for undergraduates and the polytechnic curricula of study; There is no regulatory mechanism in place to enforce the use of the DCF method of valuation, and Difficulty of implementing the DCF method, especially due to the unavailability of databank in the country, Majority of the valuers are not familiar with this method, and difficulty of understanding the DCF method and this limitation proved (Khakasa, 2009 cited (Wambua & Koori, 2018)) through his study that compared the use of discounted cash flow techniques, many are using simple ratio-based techniques like cost-benefit analysis, payback period, and return on investment (Omirin et al., 2016).

### **Methods**

In order to accomplish the study objective, the most reliable way to identify the challenges of applying the DCF method is by examining its practitioners. Therefore, it was decided that professional valuers in Sri Lanka who qualified with either the Royal Institution of Chartered Surveyors (RICS) or the Institute of Valuers of Sri Lanka (IVSL) are the most suitable study population to collect the reliable and relevant insights to the study. The author also considers the experience of the valuers, as higher experience is associated with higher reliability of data. Therefore, the study population is filtered based on a minimum number of years of experience and projects as five to enrich the reliability. Accordingly, to further validate the findings, it was decided to have a method which could implement with multiple iterations and response revisions in response to feedback (Okoli & Pawlowski, 2004). Notably, the Delphi method was identified as the most suitable method.

Further, it assists in accomplishing the research objective by establishing consensus among practitioners and academics on the actions that truly reflect what real estate professionals perform to demonstrate their expertise in practice. It enables the worldwide dispersal of humanitarian experts to be accounted for, as it can be carried out remotely and asynchronously (Boyd et al., 2014). Furthermore, structured interviews were implemented as the research tool by following two Delphi iterations. It is because this approach combines quantitative data, which identified challenging factors, with qualitative data, which provides reasons for each factor. In relation to the quantity of the study sample, since the panellists' expertise is more relevant than their number, the approach does not require the expert panel to statistically represent any population (Behrens et al., 2004 cited (Thangaratinam and Redman, 2005)). In most studies where the Delphi method is used, it is selected between 11 – 50 experts (Gossler et al., 2019). Furthermore, this study also mainly focused on analytical generalization rather than statistical generalization. Therefore, 20 participants were gathered for the first Delphi iteration and 22 participants were gathered for the second Delphi iteration through the snowball sampling method.

Based on the literature review in the first-round structured questionnaire, the questions were mainly focused on the data-bound and valuer-bound challenging factors. Further, the study implemented a hybrid approach. Therefore, a ranking system, a quantitative technique, and asking for the reason for the ranking, a qualitative part technique, was implemented. Experts were given the option to add any answers to the structured answers. The round two, leased ranked answers were eliminated, and new suggested challenges were added based on the experts' views and asked the experts to rank the refined list and revisit the reasons given previously. Typically, respondents have been given a four-point weighted scale (3 - highly agreed, 2 – moderately agreed, 1 – less agreed, & 0 - not agreed). Respondents were allowed to submit open-ended comments after voting for each challenging factor independently in addition to the given weighted scale. Therefore, the recommendations of (Sumison, 1998) and (Boyd et al., 2014) were adopted in setting the consensus level for this research. Thus, a challenge with a mean score of  $> 2.50$  was deemed to indicate the core expertise of an individual in the real estate profession. Accordingly,  $1.51 \leq \text{mean rating} < 2.50$  indicated the challenges with moderately agreed and  $0.51 \leq \text{mean rating} < 1.50$  indicated less agreement by the expertise. The further mean score ranging less than 0.51 were eliminated.

The descriptive method of data analysis was employed to analyze the questionnaire responses as the primary analysis method, and content analysis will be done as a supplement to it in both rounds. Further, the researcher used ranking and mean in data analysis. The mean response score for each activity was calculated to determine the amount of agreement among the panel members (Hasson et al., 2000) cited (Boyd et al., 2014).

## Results and Discussion

### Data Bound Factors

**Table 01:** Challenging factors of the DCF method - Data Bound Factors

Rank	ID	Challenging Factors	Mean Rating
1	D03	The difficulty in finding the matching data	2.15
1	D11	The difficulty in identifying the accurate discount rate	2.15
3	D04	The imperfection of the data available	2.10
3	D05	The problem of the accuracy of the available data	2.10
5	D01	Not having a central digitized data system	2.05

5	D02	Difficult to gather the accurate data	2.05
7	D10	The problem of increasing the cash flow uncertainty	1.95
8	D08	Non - availability of data recording standards in the market	1.75
9	D07	Authorities are not willing to share their data due to the legal policies of relevant authorities.	1.50

Source: (Gamage,2023)

Based on the information presented in the table above, it is evident that eight challenging factors were moderately agreed upon by the experts, with mean ratings falling between 1.51 and 2.50. Another challenging factor received lower agreement from the experts, as indicated by mean ratings ranging from 0.51 to 1.50. Furthermore, three additional challenging factors were identified by the experts based on their experience. These factors include property owners' reluctance to share accurate property data with valuers, limited data access in the market, and the difficulty of accurately estimating the terminal value.

The researcher categorized the aforementioned challenging factors into distinct themes to analyze the experts' suggestions regarding the challenges of implementing the DCF method for valuing income-producing properties in Sri Lanka. These themes include the difficulty of accessing reliable data and challenges associated with identifying the accurate calculation approach for factors in the DCF method of valuation. However, it is worth noting that some experts believe that data availability is not a significant issue when implementing the DCF method. This suggests a potential discrepancy in understanding and implementing the DCF method among industry experts.

### **Valuer Bound Factors**

**Table 02:** Challenging factors of the DCF method - Valuer Bound Factors

Rank	ID	Challenging Factors	Mean Rating
1	V08	Lack of training	2.35
2	V10	Lack of demand from valuers	2.20
3	V07	No consolidated/ specific data protection law in Sri Lanka	1.85
4	V06	Market fluctuations	1.80
5	V05	Difficulty in forecasting the future cash flows	1.65
6	V03	Time-consuming	1.40
7	V01	The complexity of the structure	1.35
7	V02	Heavy workload	1.35
9	V09	The problem in decision-making is if any investments derive the same NPV simultaneously.	0.90
10	V11	Not having a common framework	0.85

Source: (Gamage, 2023)

Table 02 illustrates that five challenging factors received moderate agreement from experts (mean rating between 1.51 and 2.50), and five challenging factors were less agreed upon (mean rating between 0.51 and 1.50). Additionally, experts identified five additional challenging factors based on their experience: the inability to apply the DCF method to all properties, ethical issues, lack of knowledge about valuation principles and their implementation, and insufficient overall market analysis. To provide a comprehensive explanation, the researcher categorized the aforementioned challenging factors into distinct themes to present experts' suggestions regarding the challenges associated with implementing the DCF method for valuing income-producing properties in Sri Lanka. Accordingly, these themes were created based on the previous literature

discussed in the literature chapter. These themes encompass the lack of knowledge about DCF method implementation, the complexity of the structure, market issues, and ethical concerns.

However, considering all the challenging factors within the valuer-bound factors category, it becomes apparent that the most crucial factor is lacking the knowledge and experience required for implementing the DCF method of valuation. If practitioners could enhance their understanding and expertise in implementing the DCF method, it appears that all the aforementioned challenges within the valuer-bound factors category could be overcome.

## **Conclusion**

The study provides a comprehensive overview of the challenges of implementing the DCF valuation method for valuing income-producing properties in the Sri Lankan context. It reveals that the primary challenge is accurately identifying calculation factors and approaches associated with data-bound factors. In terms of valuer-bound factors, the key limitation pertains to the lack of knowledge and implementation opportunities among valuers. This study holds great significance for the academic community as it paves the way for further research on DCF method implementation in the Sri Lankan context. Moreover, investors benefit greatly from this research, enabling them to obtain more accurate valuation data than traditional methods.

This study consists of several limitations. Such as 1) Structured online interviews with industry experts took around 2 -3 hours, which is very difficult to get allocated from industry experts due to their busy schedules. So, it leads to a limitation of the smaller sample size; 2) The study area is somewhat broad, and this study has limited only to two aspects called data-bound factors and valuer-bound factors. These reasons restrict the depth of the details that could generate from the study; 3) a few empirical studies could be found related to implementing the DCF method for investment properties worldwide. So, this has limited the discussion based on literature to ensure the reliability of the study, etc. 4.) At last, the purposive sampling method was used to collect data for this study. Further, there will be some biases also when implementing the Delphi method. So, these reasons lead to a limitation when generalizing the study results, etc.

Future studies could be conducted not only by considering the delivery end but by considering the implementation of the DCF method in Sri Lanka from an investment client perspective.

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## **References**

- Blanc, S. M., & Setzer, T. (2015). Analytical debiasing of corporate cash flow forecasts. *European Journal of Operational Research*, 243(3), 1004–1015. <https://doi.org/10.1016/j.ejor.2014.12.035>
- Boyd, D., Amidu, A.-R., & Smith, M. (2014). Developing a Practice-based Body of Real Estate Knowledge: A Delphi Study. *Journal of Real Estate Practice and Education*, 17(2), 139–167. <https://doi.org/10.1080/10835547.2014.12091737>

- Damodaran, A. (2002). *Investment Valuation: Second Edition*. In Wiley Finance.
- Damodaran, A. (2019). 2 Days Intensive Workshop on Business Valuation.
- FNRP. (2020). Using Discounted Cash Flow (DCF) Analysis to Evaluate Real Estate. . <https://fnrpusa.com/blog/how-to-evaluate-commercial-real-estate-using-discounted-cash-flow-analysis/>
- Gang, J., Peng, L., & Thibodeau, T. G. (2020). Risk and Returns of Income Producing Properties: Core versus Noncore. *Real Estate Economics*, 48(2), 476–503. <https://doi.org/10.1111/1540-6229.12208>
- Gleißner, W., & Ernst, D. (2019). *Business Valuation* (Vol. 1, Issue 1).
- Gollier, C., & Weitzman, M. L. (2010). How should the distant future be discounted when discount rates are uncertain? *Economics Letters*, 107(3), 350–353. <https://doi.org/10.1016/j.econlet.2010.03.001>
- Gossler, T., Falagara Sigala, I., Wakolbinger, T., & Buber, R. (2019). Applying the Delphi method to determine best practices for outsourcing logistics in disaster relief. *Journal of Humanitarian Logistics and Supply Chain Management*, 9(3), 438–474. <https://doi.org/10.1108/JHLSCM-06-2018-0044>
- Haltiwanger, J. (2011). Globalization and economic volatility. *Making Globalization Socially Sustainable*, 119–145.
- Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing*, 32(4), 1008–1015. <https://doi.org/10.1046/j.1365-2648.2000.t01-1-01567.x>
- Jackowicz, K., Mielcarz, P., & Wnuczak, P. (2017). Fair value, equity cash flow and project finance valuation: ambiguities and a solution. *Managerial Finance*, 43(8), 914–927. <https://doi.org/10.1108/MF-08-2016-0235>
- Levy, D. S., & Amidu, A.-R. (2021). Property Talks; Discounted Cash Flow Method of Valuation.
- Mielcarz, P., & Mlinarič, F. (2014). The superiority of FCFF over EVA and FCFE in capital budgeting. *Economic Research-Ekonomska Istrazivanja* , 27(1), 559–572. <https://doi.org/10.1080/1331677X.2014.974916>
- Okoli, C., & Pawlowski, S. D. (2004). The Delphi method as a research tool: An example, design considerations and applications. *Information and Management*, 42(1), 15–29. <https://doi.org/10.1016/j.im.2003.11.002>
- Omirin, M. M., Singhry, I. M., Auwal, U., & Mohammed, M. I. (2016). Application of discounted cash-flow (DCF) models in the valuation of investment properties in Nigeria. *International Journal of the Built Environment and Asset Management*, 2(1), 25. <https://doi.org/10.1504/ijbeam.2016.10001605>
- Real Estate Agent. (2021). The official real estate agent directory. <https://www.realestateagent.com/real-estate-glossary/real-estate/income-producing-property.html>

- RICS. (2020). Beyond COVID-19 Valuation approaches and evidence during the COVID-19 health crisis.
- Rodrigo, W. P. S., & Randika, P. A. D. D. (2022). Impact of Economic Uncertainty on Foreign Direct Investment Inflows of Sri Lanka. *European Journal of Business and Management Research*, 7(1), 213–218. <https://doi.org/10.24018/ejbmr.2022.7.1.1269>
- Sri Lanka Accounting Standard. (n.d.). Sri Lanka Accounting Standard – LKAS 40.
- Su, S.-H., Lee, H.-L., Jung-Ju Chou, Yeh, J.-Y., & Thi, M. H. V. (2018). Application And Effects Of Capital Budgeting Among The Manufacturing Companies In Vietnam. *The International Journal of Organizational Innovation*, 10(4), 111–120. <https://doi.org/10.3917/rfp.g1998.62n2.0670>
- Sumison, T. (1998). The Delphi technique: An adaptive research tool. *British Journal of Occupational Therapy*, 61(4), 153–156.
- Thangaratinam, S., & Redman, C. W. (2005). The delphi technique. *The Delphi Technique*, 120–125. [https://doi.org/10.1007/978-981-10-5251-4\\_99](https://doi.org/10.1007/978-981-10-5251-4_99)
- Vlaovic-Begovic, S., Momcilovic, M., & Jovin, S. (2013). Advantages and limitations of the discounted cash flow to firm valuation. *Skola Biznisa*, 1, 38–47. <https://doi.org/10.5937/skolbiz1301038V>
- Wambua, P. M., & Koori, J. (2018). Investment Appraisal Techniques and Financial Performance of Small and Medium Enterprises in Nairobi City County, Kenya. In *International Journal of Current Aspects in Finance (IJCAF): Vol. IV*. [www.ijcab.org/journals](http://www.ijcab.org/journals)