

**IMPACT OF INTERNAL RATE OF RETURN CRITERION (IRR) AND MODIFIED
INTERNAL RATE OF RETURN CRITERION (MIRR) ON INVESTMENT DECISIONS:
EVIDENCE FROM FOREIGN COMPANIES INVESTING IN THE IRAQI ENVIRONMENT**

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ABSTRACT

The purpose of this study is to investigate the possibility of reaching international capital budgeting criteria (IRR and MIRR), to be more suitable for international companies in making investment decisions, and to indicate the equations for measuring the results of international capital budgeting criteria that contribute to reaching future cash flows and predicting them. The research sample consisted of analysts, investors, academics, financial managers, and those interested in the field of foreign investments and financial data analysis for all service contract fields. The researcher distributed (343) valid questionnaire forms for analysis, and the form included a set of paragraphs and questions whose data were collected and classified using the statistical program (SPSS vr. 24). The study concluded that the international capital budgeting criteria (IRR and MIRR) prepared on the basis of discounted cash flows (DCF) are preferred measures in reaching the best investment decisions in the Iraqi environment..

Keywords: International Capital Budgeting criteria, Internal Rate of Return, Modified Internal

INTRODUCTION

International investment decisions are major key decisions for international companies, based on international capital budgeting Criteria. In today's business world, two essential elements for the success of international investment are international capital budgeting (INCB) and the appropriate investment decision as part of the strategic planning of international companies when seeking to invest outside their country's borders. This happens by measuring the different returns, costs, and risks that can accompany investment in a particular country. The criteria for preparing this budget are considered to be very important functions for the senior management to rely on its results in comparing the investment alternatives for international projects. This will enable them to make options after reviewing the country in which the company should invest. Through the appropriate use of the criteria for preparing the international capital budgeting INCB,

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it is possible to distinguish between international projects that deserve investment and those that do not.

According to the prevailing opinion among academics and practitioners, the future success and survival of a company ultimately depends on making the right investment decisions in the present. In their famous book on corporate finance, Brealey, Myers, and Allen stated that a good investment remains a good investment even if it is not financed optimally, but a bad investment will be a wrong decision even with the best financing policy. (Gamsakhurdia, 2015) The decision to invest in a particular country takes into account many considerations, including economic, political, cultural, and strategic changes in the international capital budgeting process. For example, how can the political, economic, legal, and cultural environment of a country affect the benefits, costs, and risks of doing business there, and therefore its attractiveness as an investment destination. Discussing the economic theory of foreign investment and identifying a number of criteria that determine the economic attractiveness of an foreign investment opportunity. And the role of political economy that government intervention in foreign investment can play in trying to identify the different benefits, costs, and risks that are likely to flow from an investment in a particular location. This is done using international capital budgeting (INCB). These are considered to be international complexities faced by companies when investing in another country with different policies, as well as differences in other areas. This enables international companies in an objective and reasonable way to make decisions between different investment alternatives within countries. Through these criteria, they can make informed choices about where to invest their scarce financial resources.

This study, along with other ongoing studies, contributes to the study and analysis of the extent to which it is possible to rely on the criteria for preparing international capital budgeting for companies and the impact that this has on investment decisions, contributing to achieving competitive advantage, sustainability, and maximizing shareholder wealth through achieving the company's goals.

To illustrate the implications related to investment decisions and the importance of relying on the internal rate of return (IRR) and modified internal rate of return (MIRR) criteria as a tool to improve the effectiveness and efficiency of investment decisions. Despite the great support and high suitability achieved by the criteria of international capital budgeting, their preparation and implementation face many obstacles, difficulties, and problems from the scientific and practical point of view, whether in how to achieve cash flow estimates and the discount rate, or from the point of view of political, social, and environmental impacts and their reflection on investment decisions.

The main research problem that emerges from this is what is the impact of the internal rate of return (IRR) and modified internal rate of return (MIRR) criteria on investment decisions? Based on the above, the main research goal is to clarify the role of the internal rate of return (IRR) and modified internal rate of return (MIRR) criteria in reaching the best investment decisions for international projects.

Review of Literature International Capital Budgeting

Several authors have conducted research in advanced countries, offering an international perspective on capital budgeting practices. Researchers have pointed out that ICB decisions face a diverse set of challenges rarely encountered by local companies in capital budgeting preparation. This is because international companies must deal with issues related to exchange rate risks, resource risks, frozen funds, foreign tax regulations, political risks, and differences in the fundamental business risks between foreign and domestic projects (Khan & Jain, 2011: 1299). Despite the complex challenges of international investments, there is a growing trend in establishing subsidiaries by multinational corporations, as well as foreign direct investment by international companies in other countries (Khan & Jain, 2011: 1300). There is a need to distinguish between the basic cash flow and the cash flow for projects, allowing multinational companies the opportunity to assess the cash flow associated with projects in two ways: one may look at the net impact of the project on their steady cash flow, while the other may treat the cash flow independently or uniformly. The theoretical perspective emphasizes that the project should be evaluated from the perspective of the parent company, where dividend distributions and debt repayments are managed by the parent company. This supports the idea that the evaluation is indeed related to the contributions that the project can make to the final result of the international company (Wankel, 2009: 223). According to Douppnik et al. (2020: 403), international companies often need to allocate significant amounts of resources to external projects, anticipating costs and benefits over a long period. These projects, known as capital investments, include examples such as purchasing new equipment and expanding into foreign regions through new investments or acquiring existing operations. Capital investments, when properly managed, often result from precise capital budgeting. ICB focuses on the expected additional cash flows associated with the project. Determining these cash flows for international projects creates typical challenges found in local capital projects. However, analyzing international projects is more complicated, even though the basic model follows the same framework proposed by the financial theory of companies. Nevertheless, international companies must consider factors unique to international operations (Buckley, 2012: 397). External projects share the usual difficulties related to local capital projects, with additional complexities in analyzing international investment projects. The same basic model proposed by the financial theory of companies is used in ICB. However, international companies must consider factors unique to international operations (Buckley, 2004: 432). From an interpretive perspective, capital budgeting may be considered more of a construct of reality than a rational choice, involving "manufacturing" or "manufacturing rationality." This construction of rational choice is linked to cultural definitions about the correct approach to dealing with social dilemmas. It is also influenced by ideological settings throughout the entire capital budgeting process, serving international companies as a tool to transfer financial biases and thus focusing on a unique financial aspect in making ID (Schonbohm & Zahn, 2016: 169). In conclusion, ICB is a concept related to managing capital and investing in assets and international projects in a way that aims to achieve maximum value for the company in the long term. International companies with global operations

or international investment activities commonly use ICB. Criteria for International Capital Budgeting Internal Rate Of Return Criterion (IRR)

When we have an investment that produces different amounts of annual cash flows, we need to determine the rate of return using the internal rate of return (IRR). (Subedi, 2011:

33) The internal rate of return (IRR) criterion takes into account the time value of money. (Beyene et al., 2014: 24) It is the flip side of net present value and is based on the same principle and mathematical equation. (Duah, 2009: 27) It is also a frequently recommended capital budgeting criterion for qualifying investment efficiency. (Szucsne Markovics, 2016:

349) The internal rate of return (IRR) is the discount rate that is often used in capital budgeting that makes the net present value result of all cash flows from a particular project equal to zero. This essentially means that the internal rate of return criterion is the rate of return that makes the sum of the present value of future cash flows and the terminal market value of a project (or investment) equal to its current market value. (Awomewe & Ogundele, 2008: 31; Subedi, 2011: 33) The internal rate of return was formerly known in business economics as the time-adjusted rate of return. (Illes, 2012: 25)

The internal rate of return (IRR) shows the actual profitability of an investment. Unlike other discounted cash flow (DCF) criteria, it has the advantage that the final sum of the calculation can be easily understood by corporate decision-makers. Moreover, the information it provides is not distorted by uncertainty. (Szucsne Markovics, 2016: 350)

The function of the internal rate of return (IRR) criterion is to find the rate of return that makes the cash flow line and the return line equal to each other. In essence, this is the rate at which the net present value is zero. In the case of investment projects that can have only one internal rate of return, the IRR shows the time-adjusted actual profitability of the investment. The project acceptance criteria are determined by how much the actual profitability is greater than the required rate of return. It shows how much the excess (or lack) rates are created compared to the required rate of return. (Illes, 2012: 25) The internal rate of return has been defined as the rate that equates the present value of the incoming cash flows with the present value of the outgoing cash flows of an investment. (Adhikari, 2012: 35)

In general, this difference does not need a numerical definition. This becomes visible when the two prices are written next to each other. When the two rates are equal, this still means that the required economic efficiency and profitability have been achieved exactly. (Illes, 2012: 25)

The higher the internal rate of return of a project, the greater the desire to implement the project. As such, the internal rate of return (IRR) criterion can be used to rank multiple potential projects that a company is considering. Assuming all other factors are equal among the different projects, the project with the highest internal rate of return is likely to be considered the best and implemented first. (Subedi, 2011: 33) The internal rate of return provides a simple hurdle rate, where any project whose cost of capital exceeds this rate should be avoided. The IRR criterion is also referred to as the economic rate of return (ERR). Simple decision-making criteria can be to accept a project if its internal rate of return exceeds the cost of capital and reject it if the internal rate of return result is less than the cost of capital. (Awomewe & Ogundele, 2008: 31) This means that if the calculated internal rate of return meets or exceeds the company's required rate of return, the project is usually accepted. (Li, 2014: 18) It is important to note, however, that the use of the internal rate of return can lead

to a number of complexities, such as a project with multiple IRRs or no IRR, and that IRR neglects the size of the project and assumes that cash flows are reinvested at a constant rate. (Awomewe & Ogundele, 2008: 31)

The internal rate of return (IRR) criterion is calculated using the following equation:

–Cft: Cash flows after taxes from year one to the end of the project

Sn: Residual value (net removal cost) in the final year of the project. Wn: Working capital recovery in the final year of the project.

COt: External cash flows required for the investment.

K: Discount rate (the researcher recommends using CAMP and adopting the equation's parameters in the host country).

Criterion Advantages (IRR)

: 34-35)

Criterion Disadvantages (IRR)

The internal rate of return (IRR) has several disadvantages, including:

Modified Internal Rate Of Return Criterion (MIRR)

According to Ivan (2005), the modified internal rate of return (MIRR) is a financial measure used to determine the attractiveness of an investment. It is generally used as part of the capital budgeting process to rank different alternative options. (Wang, 2010:

58) As the name suggests, MIRR is to improve the internal rate of return (IRR) criterion. (Hayeck, 2007: 16) And that the modified internal rate of return (MIRR) is the rate of return (discount) at which the present value of the cost of a project is equal to the present value of its terminal value. (Subedi, 2011: 35)

And that the modified internal rate of return (MIRR) is a variation of the internal rate of return (IRR) criterion that assumes that cash flows generated are reinvested at the cost of capital (usually the weighted average cost of capital (WACC)). This is preferred for the following reasons:

Any series of cash flows has one modified internal rate of return

It takes into account the rate at which the resulting cash is reinvested

It takes into account the returns at the end of the project's life, including the returns of the cash generated and reinvested elsewhere. In order for the internal rate of return to equal the total return that the project has achieved at that time, the reinvestment of the incoming cash flows must be at the same result as the internal rate of return. This is unrealistic. The modified internal rate of return (MIRR) criterion also suffers from some of the other drawbacks of IRR. Reliance on it can lead to an incorrect choice between competing investments. (Subedi, 2011: 35-36)

To calculate the modified internal rate of return (MIRR), first and foremost, the total future value of the cash flows is found at the reinvestment rate, and then the following formula is applied:

$$\text{MIRR} = \sqrt[N]{\frac{\text{FVCF}}{\text{ICO}}}$$

FVCF: Future value of cash flows

ICO: Initial cash outlay

N: Project life

Criterion Advantages MIRR

It tells us whether an investment increases the value of a company

It takes into account all the cash flows of the project

It takes into account the time value of money

4. It takes into account the risk of future cash flows through the cost of capital.

Criterion Disadvantages (MIRR)

It requires estimates of the cost of capital in order to make a decision

It may not give a value-maximizing decision when used to compare competing projects

3. It may not give a value-maximizing decision when used to select projects when there is capital rationing. (Subedi, 2011 : 36)

Investment Decisions

Popescu defines an investment decision as "involving the choice of how to commit money currently with the expectation of future flow of benefits" (Garang, 2016: 3). A decision is defined as "the informed choice based on the verification of choosing the appropriate alternative from the available alternatives" and also known as "the process of choosing the best available alternatives, after conducting a comprehensive study of the expected outcomes of each alternative and its impact on achieving the desired objectives" (Dosh & Fadhel, 2020: 3).

Pandeg also assumed that investment decisions or analysis is related to the efficient allocation of capital. It involves the decision to commit the company's funds to long-term assets. Such decisions are of great importance to a company because they tend to determine the size of its value by impacting its growth rates, profitability, and risk (Kawugana, 2019: 132; Okanta, 2018: 182).

Therefore, decision-making is "a process or method of choosing one alternative from the available alternatives to achieve a specific goal" (Dosh & Fadhel, 2020:3). There are two types of investors in making investment decisions: rational investors and irrational investors. Rational investors are those who make a simple decision based on logical thinking and information about the investment opportunity. While irrational investors decide based on their psychological side, which leads to bias in investment decisions. (Kartini & Nahda, 2021: 1233) In general, the following should be considered when making an investment decision:

Decision-making is a process that involves identifying and evaluating alternatives and selecting the best alternative based on a set of criteria.

For every situation or general problem, there are many possible solutions. These solutions must be identified, evaluated, and compared based on specific criteria.

The decision-making process depends on identifying the goal or goals that need to be achieved, then identifying the possible alternatives to achieve these goals, evaluating these alternatives based on specific criteria, and finally selecting the optimal solution that achieves the specified goals. (Dosh & Fadhel, 2020 : 3)

The researcher believes that the investment decision is the selection of the best positive alternatives to achieve the company's strategic goal, based on the experience, knowledge, and

high skills of the maker and decision-maker of investment decisions, as well as the availability of information, continuous follow-up of its implementation, and monitoring of the appropriate and inappropriate results in order to achieve the goal.

Internal Rate of Return (IRR) and Modified Internal Rate of Return (MIRR) as Investment Decision Criteria

Investment policy is based on internationally recognized criteria for selecting projects that exclude each other, as this represents an aspect of the limited nature of resources. Decisions regarding the opportunity to invest in a particular project or the choice from among several options can be relied upon when they are based on a system of complementary measures. The criteria used in investment evaluation activity must meet some basic requirements: ease of formulation, synthesis of purpose, and the possibility of expressing as much as possible based on a mathematical function. (Mieila, 2017 : 35)

International capital budgeting Criteria in investment evaluation and international investment decision-making are a multifaceted activity through which new investment projects are initiated, benefits and costs are forecasted, evaluated, authorized, and controlled. If this process is done well, there is no doubt that the company's value will be maximized. Investment projects by their nature require a large percentage of capital and play a strategic role in the company's position in the local and international markets. Therefore, investment managers need to ensure that all investment projects must follow the proper stages/steps in the investment process. (Kipkirui & Kimungunyi, 2022 : 242)

Internal Rate of Return Criterion (IRR)

The study by John provides a model for estimating the internal rate of return (IRR). Investment analysts should take the time to estimate the IRR of projects so that investors can get the money that will not expose their investments to risk. (John, 2019: 9)

The study by Wangchuk revealed that the IRR criterion is associated with capital budgeting and is widely used in large projects undertaken by countries and companies around the world. The findings revealed some critical conditions that apply to choosing the best alternatives in using each criterion. In making investment decisions for engineering projects, the IRR is a fundamental criterion for evaluation. (Wangchuk, 2022: 28)

Hazen's study provided that the IRR is a good criterion for evaluating the cash flows of an investment project. (Hazen, 2009: 1030) However, Magni's study presented an opposite opinion, that the IRR is not a reliable profitability indicator because it may not exist, may have multiple roots, and is generally inconsistent with NPV. (Magni, 2010: 25)

Satyasai's study also shows that the IRR criterion, which is widely used in project evaluation, suffers from some problems, the most important of which is the assumption of reinvesting at the IRR rate, which has often been contested in the project evaluation literature. The ranking of projects based on the results of the IRR criterion and the NPV criterion may also conflict because of this assumption. Differences in scale and time often make it difficult to compare projects. (Satyasai, 2009: 1)

Bora's study found that the IRR criterion can yield multiple results for an investment project and fails to work under varying cost of capital conditions. In a number of situations (in the timing of cash flows, the size of the investment, or the project's lifespan), the results of the IRR

criterion can give a misleading signal for mutually exclusive projects. Since IRR violates the principle of value added; because it may fail to maximize wealth under certain conditions, it cannot be relied upon in making investment decisions. (Bora, 2015: 70)

In conclusion, Babaei and Jassbi's study shows that many researchers and experts have tried to solve the problems of the IRR criterion, but they are not complete. In particular, some of them have provided inappropriate decisions or the methods proposed by some studies cannot cover all of IRR's drawbacks. Through the studies, Babaei and Jassbi have proposed that the IRR criterion is one of the most attractive indicators for choosing the best investment decision, but it contains some important drawbacks from a practical and theoretical perspective. Multiple attempts have been made to solve IRR challenges, but none of them has been perfect. In their study, they propose the modified average rate of return (MARR) criterion as a profitability indicator to calculate a unique rate of return

for all types of cash flow streams so that the results obtained are consistent with the NPV criterion in making investment acceptance/rejection decisions. (Babaei & Jassbi, 2021: 1)

Based on the literature and empirical studies, the researcher believes that the internal rate of return (IRR) criterion is a financial measure that measures the profitability of an international investment project by calculating the rate at which the net present value (NPV) of the project equals zero. The IRR criterion is an important tool for making international investment decisions, as it helps investors evaluate the potential profitability of an investment project and compare it to other investment proposals. Through the IRR criterion, decision-makers can identify investment projects that are likely to generate the highest return and make informed investment decisions if other factors are taken into account in the calculation, such as exchange rate volatility, political and social risks, and the temporal and spatial costs of the investment project. By taking all financial and non-financial considerations into account in the calculation, it is important to use the IRR criterion in conjunction with other criteria. This will allow international investment decision-makers to more accurately evaluate the potential profitability of an investment project and make more informed decisions.

Modified Internal Rate of Return Criterion

Xie's study showed that many scholars have studied and proposed many improved methods to address the shortcomings of the internal rate of return (IRR) criterion. By introducing the modified internal rate of return (MIRR) criterion to improve the IRR criterion. This study compares the two. The MIRR criterion provided a relatively simple solution. However, the value of MIRR is affected by the discount rate, which is often the minimum rate of return, and the ranking problem still exists. Therefore, it is only suitable for evaluating one project. It cannot be applied to the evaluation of the mutually exclusive project. (Xie, 2021: 4087)

Lifland calls for the use of the modified internal rate of return (MIRR), which is a more reliable criterion by nature than the traditional IRR. In addition, this study includes the MIRR stratification, which provides another layer of risk analysis that facilitates project comparisons even when other discounted cash flow methods have led to conflicting results. The results of this study proved that the modified internal rate of return (MIRR) is a more stable method than the IRR because it provides a conservative return, deals with a series of positive and

negative cash flows, and sets the project's maximum rate as the reinvestment rate. (Lifland, 2011: 76)

Qi et al.'s study concluded the possibility of overcoming the shortcomings of the net present value (NPV) and IRR criteria in making investment decisions perfectly. By using the modified internal rate of return (MIRR) criterion, investors can calculate more accurate data in order to provide compatibility for companies when choosing their project. The MIRR criterion introduces a new term called the reinvestment rate. It can take into account cash flow investments between the first period and the last period. Most importantly, the free cash flow is doubled over a time horizon at the MIRR reinvestment rate. This ratio represents the expected future opportunities with the investment risks. It can solve the problem that the IRR may have different values when the cash flow turns from negative to positive more than once. MIRR shows a good way to consider effects such as reinvestment. (Qi et al., 2022: 713)

Chen et al. also support in their study the superiority of using the modified internal rate of return (MIRR) criterion over the net present value (NPV) and IRR criteria in making investment decisions. (Chen et al., 2022: 1200)

Qi et al.'s study sets a prerequisite for using the modified internal rate of return (MIRR) criterion, which is that all investments must be of the same size. The modified internal rate of return (MIRR) criterion cannot solve this problem when projects require different investment amounts, or when funding is limited, or when projects are mutually exclusive. (Qi et al., 2022: 713-714)

Overall, the studies discussed in this passage provide a variety of perspectives on the modified internal rate of return (MIRR) criterion. Xie, Lifland, Qi et al., and Chen et al. all argue that MIRR is a more reliable and accurate criterion than IRR for evaluating investment projects. However, they also acknowledge that MIRR has some limitations, such as the need for all investments to be of the same size and the inability to solve the problem of mutually exclusive projects.

From the above, it is clear to the reader that the modified internal rate of return (MIRR) criterion has somewhat addressed the shortcomings of the internal rate of return (IRR) criterion, but has created some shortcomings in its use for evaluating international investments, including those that were discussed by Qi et al. (2022) in their study. A prerequisite for use has also been set, which is that the investment projects must be of the same size. The situation remains the same in the evaluation of international investments due to the many complexities, sudden events, economic, social, environmental changes, as well as political and security factors.

In general, the modified internal rate of return (MIRR) criterion is a useful investment criterion that provides a more accurate measure of the profitability of an investment project compared to the IRR criterion. However, the modified internal rate of return (MIRR) criterion should be used in conjunction with other criteria to make informed investment decisions.

Therefore, with the specific hypotheses, the important research issues can be analyzed:

H1: There is a significant impact of the (IRR) criterion on investment decisions.

H2: There is a significant impact of the (MIRR) criterion on investment decisions.

13.1. Methodology

We distributed 343 valid questionnaire forms for analysis, including a set of paragraphs and questions. The data were collected and classified using the statistical program (SPSS vr. 24). We used two types of statistical analysis: descriptive statistics, including frequencies, proportions, means, standard deviations, variation coefficients, and relative significance, in addition to graphical representations that provide a clearer picture of the nature and characteristics of the data. The second type is analytical statistics, including testing correlation relationships and impact relationships between research variables.

Additionally, we used Cronbach's alpha coefficient to test the reliability and stability of the questionnaire form.

RESULTS

Significance Test of Correlations

Here, we will find and test the correlation relationship by determining the strength and significance between the study variables. The results have been obtained and included in the following table using the statistical program SPSS vr. 24:

Table 1 Correlation Values Between Study Variables.

Correlations		
		investment decisions
IRR Criterion	Pearson Correlation	.546**
	Sig. (2-tailed)	.000
	N	343
MIRR Criterion	Pearson Correlation	.431**
	Sig. (2-tailed)	.000
	N	343

Alternative Hypothesis

H1 : There is a statistically significant correlation between the internal rate of return (IRR) criterion and investment decisions.

From the table above, it is clear that the correlation coefficient between the internal rate of return (IRR) criterion and investment decisions is 0.546. Because the value of sig.=0 is less than 5%, this means that the correlation is a significant positive correlation at the 5% statistical significance level. Therefore, we conclude that an increase in the value of the internal rate of return leads to an increase in the degree of suitability and reliability in the results of investment decisions.

The second hypothesis (testing the correlation between the modified internal rate of return (MIRR) criterion and investment decisions

The second hypothesis was formulated in the following form:

H0: There is no statistically significant correlation between the (MIRR) criterion and investment decisions.

Alternative Hypothesis

H1: There is a statistically significant correlation between the (MIRR) criterion and investment decisions.

From the table above, it is clear that the correlation coefficient between the modified internal rate of return (MIRR) criterion and investment decisions is 0.431. Because the value of sig.=0 is less than 5%, this means that the correlation is a significant positive correlation at the 5% statistical significance level. Therefore, we conclude that an increase in the value of the results of the modified internal rate of return criterion leads to an increase in the degree of suitability and reliability in the results of investment decisions.

Impact Analysis between Research Variables

Here, we will test the hypotheses related to the impact analysis of independent variables on the dependent variable. Null hypotheses were formulated for this purpose.

Hypothesis 1 (Impact Test of IRR on investment decisions):

Null Hypothesis: There is no statistically significant effect of IRR on investment decisions.

Alternative Hypothesis: There is a statistically significant effect of IRR on investment decisions.

The analysis extracted a set of tables representing the results of the impact analysis. The following table illustrates the values of determination coefficients, corrected determination coefficients, and the standard error value.

Table 2 Values of Determination and Corrected Determination Coefficients

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.546 ^a	.298	.296	.37493

The above table shows that the determination coefficient (R-squared) is 0.30, and the corrected determination coefficient is also 0.30. This indicates that the regression model, which includes the effect of IRR on investment decisions, explains 30% of the total variances, leaving the remaining percentage to be influenced by other variables and factors.

The table above indicates that the regression model used is statistically significant at a 5% significance level, where the F-test value is 144.683, and the significance value (sig) is equal to zero, which is below the 5% significance level. The following table includes the regression parameters (coefficients) for the IRR criterion in investment decisions and their corresponding t-test values and significance:

Table 3 Analysis of Variance (ANOVA) for the Regression Model

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	20.339	1	20.339	144.683	.000 ^b
	Residual	47.935	341	.141		
	Total	68.274	342			

From the results, it is evident that the first alternative hypothesis is accepted (there is a statistically significant effect of the IRR criterion on investment decisions). This means that

the IRR criterion has a positive and statistically significant impact on investment decisions at a 5% significance level. This is indicated by the calculated t-value of 12.028 and the significance value (sig.) being equal to zero, which is below the 5% significance level. The regression coefficient value is 0.55, suggesting that an increase in the IRR criterion by one unit leads to a 0.55 increase in the appropriateness and reliability of investment decision results.

The second hypothesis (testing the effect of the MIRR criterion on investment decisions): The null hypothesis to be tested here is as follows:

Table 4 Analysis of Variance Table for the Regression Model.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.259	.152		14.910	.000
1 IRR	.469	.039	.546	12.028	.000

Null Hypothesis: There is no statistically significant effect of the MIRR criterion on investment decisions. Alternative Hypothesis: There is a statistically significant effect of the MIRR criterion on investment decisions. A set of tables representing the impact analysis results was extracted. The following table represents the correlation values, determination coefficients, adjusted determination coefficients, and standard error values:

Table 5 Values of Determination Coefficients and Adjusted Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.431 ^a	.186	.184	.40370

Model R Square Adjusted R Square Std. Error of the Estimate The results indicate that the determination coefficient is 0.19, and the adjusted determination coefficient is also 0.18. This means that the regression model used, which includes the impact of the MIRR criterion on investment decisions, was able to explain 19% of the total variations, and the remaining 81% is attributed to other variables and factors. Additionally, we found an Analysis of Variance (ANOVA) table, as shown in the following table:

Table 6 Analysis of Variance Table for the Regression Model

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	12.701	1	12.701	77.932	.000 ^b
1 Residual	55.573	341	.163		
1 Total	68.274	342			

The table above indicates that the regression model used is statistically significant at a 5% significance level. The F-test value is 77.932, and the significance value (sig) is equal to zero, which is below the 5% significance level. The following table includes the regression parameters (coefficients) for the MIRR criterion in investment decisions and their corresponding t-test values and significances: From the above table, it is evident that the first

alternative hypothesis is accepted (there is a statistically significant effect of the MIRR criterion on investment decisions). This

Table 7 Analysis of Variance Table for the Regression Model

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.259	.152		14.910	.000
	IRR	.469	.039	.546	12.028	.000

Means that the MIRR criterion has a positive and statistically significant impact on investment decisions at a 5% statistical significance level. This is indicated by the calculated t-value of 8.828, and the significance value (sig.) being equal to zero, which is below the 5% significance level. The regression coefficient value is 0.43, suggesting that an increase in the MIRR criterion by one unit leads to a 0.43 increase in the appropriateness and reliability of investment decision results.

CONCLUSION

The results of international capital budgeting Criteria are more relevant and beneficial for making investment decisions. There is a need for comprehensive disclosure of information related to assumptions and non-observable data and to work on developing them in order to reach an accurate, reliable, and appropriate measurement for making investment decisions based on the results of international capital budgeting Criteria. The adoption of the best international capital budgeting Criteria achieves the correct measurement, thereby achieving real and appropriate results for investors. Also, the Criteria prepared on the basis of discounted cash flows (DCF) are the closest to expressing the true value of the investment project. Conducting the process of predicting cash flows and risks in accordance with the correct methods and procedures and not expressing them in a default manner gives appropriate and positive results to investors. It also gives a true and appropriate representation of information in the process of preparing international capital budgeting and is reflected positively on the results of making investment decisions. Discount rates required according to the Capital Asset Pricing Model (CAPM) vary due to the difference in the results of the degree of risk, inflation rate, and risk-free interest rate from country to country.

Therefore, investment decision-making does not depend solely on accounting information.

Managers with different experiences and information should discuss with each other to clarify complex problems and the feasibility of potential solutions. There are many capital budgeting evaluation criteria in use, but two of the main criteria for evaluating investments are internal rate of return (IRR) and modified internal rate of return (MIRR). Both of these criteria assume that cash flows are known with certainty, that there is sufficient money available to undertake all profitable investments, and that there are no taxes or inflation at high rates. The results of investment decisions are based on the results of the criteria that are calculated according to accurate financial analysis. Intuition and judgment based on experience also play a key role in investment decision-making.

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