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# AGRICULTURAL INVESTMENT ACCOUNTING: A CASE STUDY OF AN ENTERPRISE IN THE THRACE REGION

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**Abstract:** This article provides an in-depth examination of the investment process within the agricultural sector, focusing on A Birlik, a significant agricultural enterprise in the Thrace region. The study explores how A Birlik makes investment decisions, the types of investments it undertakes, and the impact of these investments on its operations and sustainability. A critical component of this research is the role of agricultural investment accounting in enabling A Birlik to make informed financial decisions, accurately evaluate investment feasibility, and optimize resource allocation for long-term economic and environmental sustainability. The research also considers how geographical conditions, technological developments, market dynamics, and competition influence agribusiness investment decisions. The findings from this study aim to enrich the existing literature on agricultural investments and offer valuable insights for practitioners, policymakers, and stakeholders in the agricultural sector. The article underscores the need for continuous adaptation and innovation in business practices within the agricultural sector.

**Keywords:** Agricultural investments, Investment process, Financial analysis, Financial accounting

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## 1. Introduction

Investment decisions are crucial for both the investing organization and the broader economy. These decisions require a thorough evaluation of alternatives to optimize resources. A comprehensive feasibility study for an investment project should encompass economic, technical, financial, and social analyses, catering to all parties involved. Investors prioritize profitability and payback rate, lenders focus on financial ratios, local communities consider the regional benefits, and the state evaluates contributions to employment and other macro criteria. Therefore, an investment project should present objective, data-driven analyses to meet the expectations of all stakeholders. Alternative investments should be assessed using financial analysis methods, with the most suitable project being selected based on strategic sensitivities and micro and macro policies.

Investment decisions hold strategic importance for both the investing organization and the wider economy. These decisions necessitate a comprehensive evaluation of available alternatives to ensure optimal resource allocation. The process of making an informed investment decision is complex and multifaceted, involving a careful balance of risk and reward.

A well-conducted feasibility study for an investment project should encompass a broad range of analyses. These include economic, technical, financial, and social aspects, each of which provides a different perspective on the potential value and impact of the investment. This comprehensive approach ensures that the study caters to the interests and concerns of all parties involved in the investment.

Different stakeholders have different focuses when it comes to evaluating an investment. Investors, for instance, prioritize the profitability and payback rate of the investment, seeking a return on their capital. Lenders, on the other hand, focus on financial ratios to assess the risk associated with their loans. Local communities, where the investment is made, consider the regional benefits, such as job creation and economic development. Meanwhile, the state evaluates the investment's contributions to employment and other macroeconomic criteria, such as GDP growth and economic diversification.

Therefore, an investment project should present objective, data-driven analyses to meet the expectations of all these stakeholders. It is crucial that the results are not manipulated and accurately reflect the potential outcomes of the investment.

In the context of agricultural investments, alternative projects should be assessed using robust financial analysis methods. The most suitable project should then be selected based on strategic sensitivities, as well as micro and macro policies. This approach ensures that the chosen investment aligns with both the specific goals of the investing organization and the broader economic and policy environment.

### 1.1. Investment

An investment is an allocation of resources, such as time, money, effort, or other assets, with the expectation of generating future benefits or returns. These returns may come in the form of income, profit, or the achievement of specific objectives (Valencia et al., 2020).

Investments can be made in various forms, including financial assets like stocks and bonds, real estate, or even in the development of new products, processes, or technologies. In the context of businesses and organizations, investments often involve the allocation of resources towards projects or initiatives that are expected to generate financial returns or contribute to the achievement of strategic objectives (Kalinina et al,, 2019).

According to Mulska and Kloba (2021), investments serve as a pivotal catalyst in propelling economic growth and development. They have the potential to stimulate job creation, foster wealth generation, and enhance living standards. Furthermore, investments targeted towards projects focused on energy conservation can significantly contribute to environmental sustainability and promote the judicious utilization of resources.

**1.2. Investment Types**

Investment types are diverse and can be categorized based on various factors such as the asset class, risk level, and investment objective. Common types of investments include stocks, bonds, mutual funds, real estate, and commodities, each offering unique benefits and risks. For instance, stocks offer potentially high returns but carry a higher risk, while bonds are generally safer but offer lower returns. Mutual funds and exchange-traded funds provide diversification by investing in a variety of assets. Real estate and commodities like gold and oil offer tangible assets that can act as a hedge against inflation. Understanding these investment types is crucial for investors to make informed decisions that align with their financial goals and risk tolerance.

Here are some of the main types of investments (Table 1). The Table 1 categorizes different types of investments, each with its unique characteristics and risk-return profiles. It includes direct investments in physical properties through Real Estate Investments, equity ownership in companies via Stock Investments, lending to entities through Bond Investments, and indirect real estate investments through Real Estate Investment Trusts (REITs). Each investment type offers distinct opportunities for income generation and capital appreciation, while also presenting unique risks and management requirements.

**1.3. Investment Process**

The investment process is a systematic approach to investing that involves several key steps, each designed to help investors make informed and strategic decisions. It begins with setting clear financial goals, which could range from short-term objectives like saving for a vacation to long-term goals like retirement planning. The next step is assessing risk tolerance, which determines the level of risk an investor is comfortable with. This is followed by asset allocation, where investors decide how to distribute their investments across various asset classes to maximize returns and minimize risk (Bodie et al., 2014). According to Reilly and Brown (2011), the process continues with the selection of specific investments within those asset classes, based on thorough research and analysis. Finally, the investment process involves regular performance reviews to ensure that the investments are still aligned with the investor's goals and risk tolerance, and adjustments are made as necessary.

The investment process involves a series of steps that guide investors in making informed decisions about where to allocate their resources. Here's an overview of the process:

**Table 1.** Investment types

| | |
|---|---|
| Real Estate Investments | This involves the purchase of physical property, such as residential homes, commercial buildings, or land. Real estate can provide income through rental returns and potential appreciation in property value over time. However, it also comes with risks, such as market fluctuations and property management challenges (Janoschka et al., 2020). |
| Stock Investments | Buying stocks, or shares, means purchasing a piece of ownership in a company. Stock investors make money when the company performs well and the stock's price increases. They may also receive dividends, which are a portion of the company's profits distributed to shareholders. The risk in stock investing comes from the potential for the company to perform poorly, causing the stock's price to fall (Bouri et al., 2020). |
| Bond Investments | Bonds are essentially loans that investors make to entities like governments or corporations. The bond issuer promises to pay the investor back the principal amount of the loan, along with regular interest payments, over a specified period. Bonds are generally considered lower risk than stocks, but they also typically offer lower returns (Zhang t al., 2016). |
| Real Estate Investment Trusts (REITs) | REITs are companies that own, operate, or finance income-generating real estate. Investors can buy shares in a REIT, similar to how they can buy shares in a company's stock. REITs provide a way for individual investors to earn a share of the income produced through real estate investment, without having to buy, manage, or finance any |

properties themselves (Tiwari et al., 2020).

- Goal Setting: The first step in the investment process is to define your financial goals. These could be short-term (e.g., saving for a vacation), medium-term (e.g., saving for a down payment on a house), or long-term (e.g., saving for retirement). Your goals will guide your investment strategy and help you decide how much risk you're willing to take on (Asadzadeh et al., 2014).
- Risk Assessment: This involves evaluating your risk tolerance, which is the degree of variability in investment returns that an investor is willing to withstand. Risk tolerance can be influenced by factors such as age, income, financial goals, and personal comfort with risk (Li and Madanu, 2009).
- Asset Allocation: This step involves deciding how to distribute your investments among different asset classes, such as stocks, bonds, and real estate. The goal is to maximize returns and minimize risk by diversifying your portfolio (Trianni et al., 2017).
- Investment Selection: Once you've decided on your asset allocation, the next step is to choose specific investments within those asset classes. This could involve researching and analyzing individual stocks, bonds, or real estate properties (Cheng et al., 2021).
- Performance Review: This involves regularly reviewing your investments to ensure they're still aligned with your financial goals and risk tolerance. If necessary, you may need to rebalance your portfolio, which involves buying or selling assets to maintain your desired asset allocation (Li and Madanu, 2009).

**1.4. Agricultural Investments**

Agricultural investments encompass a broad range of capital allocations aimed at enhancing productivity, profitability, and sustainability in the agricultural sector. These investments can take various forms, including direct investments in farming activities, infrastructure development, technological advancements (AgTech), supply chain improvements, and financial services tailored for agricultural needs (Belhadi et al., 2021). For instance, direct investments might involve purchasing farmland or livestock, while infrastructure investments could focus on irrigation systems or storage facilities (Di Matteo and Schoneveld, 2016). AgTech investments might include precision farming technologies or biotech innovations, and supply chain investments could aim to improve efficiency from production to distribution (Vorley et al., 2012). Lastly, financial services like loans or insurance can provide farmers with the necessary resources to manage risks and invest in productivity-enhancing technologies. Each form of investment plays a crucial role in supporting the agricultural sector's growth and its ability to meet global food demand (Kadigi et al., 2017).

Agricultural investments refer to the allocation of capital in initiatives related to the agricultural sector. These investments can take various forms (Table 2).

Agricultural investments encompass a broad range of capital allocations aimed at enhancing productivity, profitability, and sustainability in the agricultural sector. These investments can take various forms, including direct investments in farming activities, infrastructure development, technological advancements (AgTech), supply chain improvements, and financial services tailored for agricultural needs. For instance, direct investments might involve purchasing farmland or livestock, while infrastructure investments could focus on irrigation systems or storage facilities (Vorley et al., 2012). AgTech investments might include precision farming technologies or biotech innovations, and supply chain investments could aim to improve efficiency from production to distribution.

**Table 2.** Agricultural investment types

| | |
|---|---|
| Direct Investments in Agricultural Production | This involves investing directly in farming activities, such as crop cultivation, livestock rearing, or aquaculture. It may involve purchasing or leasing farmland, buying farming equipment, or investing in seed and fertilizer (Belhadi et al., 2021). |
| Investments in Agricultural Infrastructure | This includes investments in infrastructure that supports agricultural activities, such as irrigation systems, storage facilities, and processing plants. These investments can help increase agricultural productivity and reduce post-harvest losses (Matteo and Schoneveld, 2016). |
| Investments in Agricultural Technology (AgTech) | AgTech refers to the use of technology to enhance agricultural production. This can include investments in precision farming technologies, biotechnology, farm management software, and other technological innovations that can improve efficiency and productivity in the agricultural sector (Belhadi et al., 2021). |
| Investments in Agricultural Supply Chains | This involves investing in the various stages of the agricultural supply chain, from production to processing to distribution. These investments can help improve supply chain efficiency and ensure that agricultural products reach consumers in a timely and cost-effective manner (Vorley et al., 2012). |
| Investments in Agricultural Finance | This includes providing loans, insurance, and other financial services to farmers and agricultural businesses. These financial services can help farmers manage risks, invest in productivity-enhancing technologies, and ensure the financial sustainability of their |

operations (Kadigi et al., 2017).

Lastly, financial services like loans or insurance can provide farmers with the necessary resources to manage risks and invest in productivity-enhancing technologies. Each form of investment plays a crucial role in supporting the agricultural sector's growth and its ability to meet global food demand (Kadigi et al., 2017).

**1.5. Evaluating the Financial Returns of Investment Projects**

The survival and growth of an enterprise depends on its ability to cope with its competitors, that is, its competitiveness. A healthy determination of the competitiveness of an enterprise is realized by measuring and analyzing the financial performance of the enterprise in question. In this context, investors are of vital importance for agricultural enterprises in the long term (Acar, 2003). Five methods are used to evaluate the financial returns of investment projects. These are giving below.

**1.5.1. Net present value method (NPV)**

The net present value of an investment project is the ratio of the cash inflow and cash outflow planned to be provided from the investment each year to the expected return on the investment (Gedik et al. 2005). Net present value and other financing are concepts that are valid in making decisions about capital investments and show the time value of money (Graham, 2019).

**1.5.2. Internal rate of return method (IRR)**

According to Shafiee et al. (2020), the Internal Rate of Return (IRR) is a crucial financial metric used in investment decision-making. It is particularly relevant in the context of projects with significant upfront costs and long-term returns, such as renewable energy projects. The IRR is the discount rate that makes the net present value (NPV) of all cash flows (both positive and negative) from a particular project equal to zero. In other words, it is the rate at which the present value of the project's expected benefits exactly equals the present value of its associated costs.

**1.5.3. Benefit cost ratio**

The Benefit-Cost Ratio (BCR) is a significant tool used in economic and financial analysis. It is the ratio of the present value of benefits relative to the present value of costs. The decision rule is the following: if the BCR is greater than 1 or the Net Present Value (NPV) is greater than 0, the project will be accepted. Conversely, if the BCR is less than 1 or the NPV is less than 0, the project will be rejected. This ratio is used to measure project worth and allows estimations of the degree of project risk exposure to be made (Ruegg and Marshall, 2013).

**1.5.4. Payback period method**

The Payback Period Method is a capital budgeting technique that determines the time it takes for an investment to generate cash flows equal to the original investment cost. It is a simple and widely used method for quick estimation of investment recovery. For instance, in the context of emission abatement in maritime shipping, the payback period can be used to assess the economic feasibility of different abatement options. The payback period of such investments can be significantly influenced by factors such as fuel prices. Lower prices could delay the payback period of investments, even up to two times in some cases (Zis et al., 2016).

**1.5.5. Annual equivalent cash flow method**

The Annual Equivalent Cash Flow Method, also known as the Equivalent Annual Value (VAE) method, is used for economic analyses, particularly in determining the economic feasibility and rotation age of projects. This method involves a comprehensive analysis of cash flow variables, including costs and revenues, over the expected lifetime of a project. The VAE is calculated using costs at the end of each year, revenues at the end of each year, the discount or interest rate, and the project's duration in years. The economic rotation age is defined as the age at which the highest VAE is attained. This method is particularly useful in scenarios where the costs and revenues of a project change over time, such as in the cultivation of nonnative candeia, a plant used for essential oils and fence posts (Silva et al., 2012).

## 2. Materials and Methods

The study conducts a case study on A Birlik, a cooperative union with an important role in the agricultural sector in the Thrace region. The study examines how A Birlik makes investment decisions, what types of investments it makes, and the consequences of these investments on its operations and sustainability. These include decisions to acquire assets, increase production capacity and improve storage facilities. The study also assesses how geographical conditions, technological developments, market dynamics and competition affect agribusiness investment decisions. The data collection method of the study was obtained from primary and secondary sources.

**2.1. Primary Data**

Interviews were conducted with key stakeholders, including A Union management and staff, to gather information on investment processes, decision-making criteria and challenges faced. Senior managers, middle managers and operational staff were interviewed.

**2.2. Secondary Data**

A Birlik's financial reports, company documents and investment plans were collected. In addition, national agricultural data and policies related to the Thrace region were collected from government sources and databases.

**2.3. General Information on the Enterprise**

A Birlik was established in 1966 with the merger of Edirne, Lüleburgaz and Babaeski agricultural sales cooperatives. Today, the Union is an organization consisting of 48 cooperatives and 36,342 producer members spread across 13 provinces, mainly in Thrace and Marmara regions. The Union started its industrial activities by purchasing an oil factory in 1976 in order to

utilize the sunflower products produced by its partners. Since 1980, Tekirdağ integrated facilities have been put into operation in units. As a result of this process, both plants have an annual production capacity of 300,000 tons of sunflower, 150,000 tons of refined oil, 30,000 tons of margarine, 315,000 tons of fodder, 75,000 tons of crude oil storage and 45,000 tons of sunflower collection. The Union has an annual sunflower processing capacity of 300,000 tons. In this sector, it has the highest sunflower processing capacity in the country. The Union is a leader in the vegetable oil production sector. In this context, it has a market share of 17-18% in refined oil and 7-8% in margarine. The Association carries out production with "TS-EN-ISO 9001 Quality Management System", "TS-EN-ISO 22000 Food Safety Management System" and "TS-EN-ISO 14001 Environmental Management TSE OHSAS 18001" certificates. Both enterprises of the Union have waste treatment units in accordance with European standards and production is carried out in an environmentally friendly manner.

In the images in Figure 1 and Figure 2, general views of the integrated plant and oil factories of A Birlik enterprise, which we examined within the scope of the study, are presented.

## 3. Results

In the application part of the study, various calculations were made to evaluate the financial return of the steel silo investment project of A Birlik.

Net present value of a birlik steel silo investment project was given in Equation 1.

$$NBD = \sum_{t=0}^{n} \frac{Bt}{(1+r)^t} - \sum_{t=0}^{n} \frac{Ct}{(1+r)^t} \quad (1)$$

here;

*Bt*= Cash inflow in year t - 250,000

*Ct*= Cash outflow in year t – 1,250,000

*n*= Economic life of the project (years) - 8 years

*r*= discount rate - 10%

In this case, the net present value calculation of our enterprise is as follows according to the years:

- 2015: 227,272.73 TL
- 2016: 260,330.58 TL
- 2017: 300,525.92 TL
- 2018: 307,356.05 TL
- 2019: 248,368.53 TL
- 2020: 338,684.36 TL
- 2021: 384,868.59 TL
- 2022: 373,250.90 TL

Net Present Value, in the net present value calculation made by using the data obtained by the enterprise, the net present value of the investment made by A Birlik was found to be 1,190,612.66 TL. The net present value expectation for the investment made by the enterprise is greater than zero. It is seen that the investment made is highly efficient.

**Figure 1.** Integrated facilities of a Birlik enterprise.

**Figure 2.** Karacabey oil factory

Net present value calculation of enterprise A for 8 years: TL 1,190,612.66 (Figure 3).

A Birlik's internal rate of return for 8 years: 27.82% (Figure 4).

- 2015: -1,250,000
- 2016: 250,000
- 2017: 315,000
- 2018: 400,000
- 2019: 450,000
- 2020: 600,000
- 2021: 750,000
- 2022: 800,000

The internal rate of return was found to be 27.82% as a result of the internal rate of return analysis using the data obtained from the enterprise. It is the project with the highest internal rate of return among the projects planned by the enterprise. While the profitability rate expected by the enterprise from the investment is 22%, the internal rate of return of 27.82% shows the feasibility of the project.

The benefit-cost ratio is a performance measure that expresses the ratio between the returns and costs of a project or investment (Figure 5). This ratio is used to assess the net benefits of a project or investment on society or business.

The payback period calculation made with the data obtained from the enterprise was found to be 5.72 years, which means that the enterprise recovered the money it spent for this project after 5.72 years (Figure 6).


**Figure 3.** Net present value calculation.

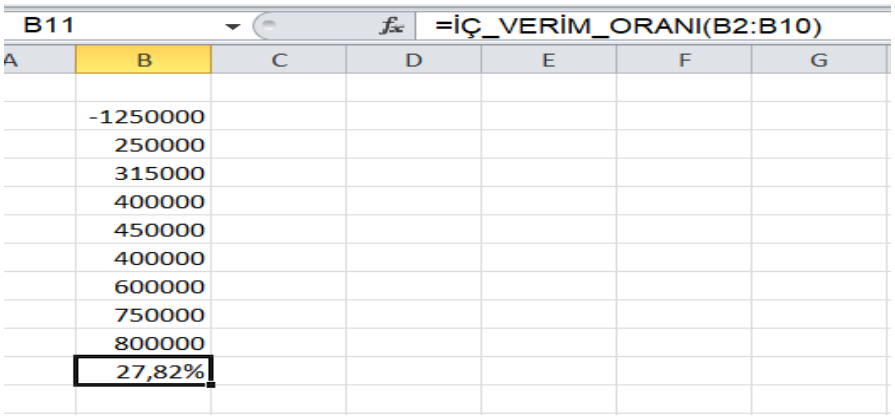


**Figure 4.** Internal rate of return of a Birlik steel silo investment project.

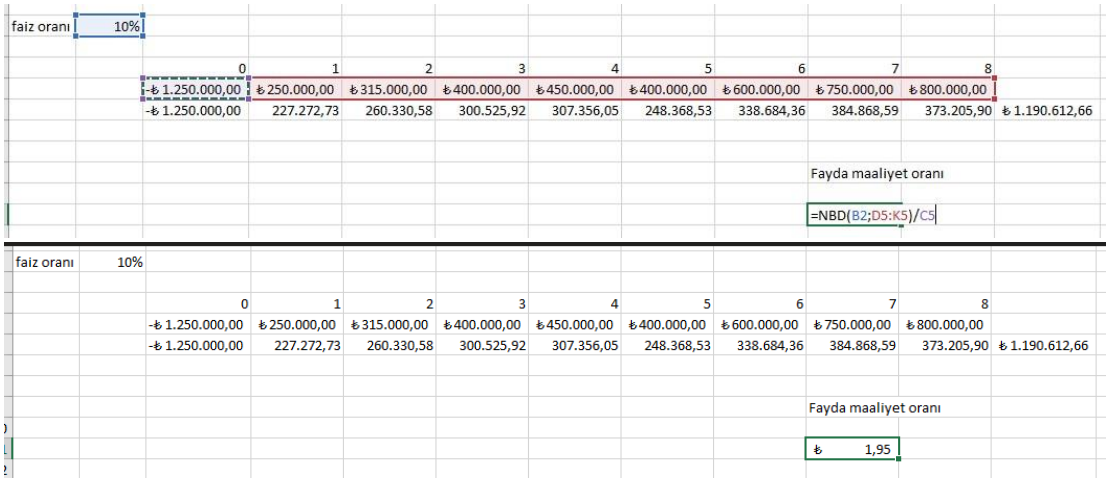


**Figure 5.** Benefit-cost ratio of a Birlik steel silo investment project.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 11 | | | | | | | | | |
| 12 | | | | | | | | | |
| 13 | faiz oranı | 10% | | | | | | | |
| 14 | A.O.S.M. | 18% | Dönem | NNA | İSK.ED.NNA | BAKİYE | GER.ÖD.SÜRE | | |
| 15 | | | 0 | -1.250.000 | -1.250.000,00 | -1.250.000,00 | 0 | | |
| 16 | | | 1 | 250.000 | 211.864,41 | -1.038.135,59 | 1 | | |
| 17 | | | 2 | 315.000 | 226.228,10 | -811.907,50 | 2 | | |
| 18 | | | 3 | 400.000 | 243.452,35 | -568.455,15 | 3 | | |
| 19 | | | 4 | 450.000 | 232.104,99 | -336.350,15 | 4 | | |
| 20 | | | 5 | 400.000 | 174.843,69 | -161.506,47 | 5 | | |
| 21 | | | 6 | 600.000 | 222.258,92 | 60.752,46 | 0,726659096 | 5,72 yıl | |
| 22 | | | 7 | 750.000 | 235.443,77 | | | | |
| 23 | | | 8 | 800.000 | 212.830,53 | | | | |
| 24 | | | | | | | | | |

**Figure 6.** Payback period of a Birlik steel silo investment project.

### 3.1. Annual Equivalent Cash Flow of a Birlik Steel Silo Investment Project

The annual equivalent cash flow method (AECFM) enables the evaluation of a project or investment by converting its cash flows into their equivalent values over a certain period of time (usually annually). This method is widely used to analyze the economic profitability of the project or investment. The cash flows of the project or investment may be irregular, i.e. not the same amount of cash inflows or outflows every year. In Excel, special formulas and functions may need to be used to handle such irregular cash flows and calculate equivalent values accurately.

### 3.2. SWOT Analysis of a Birlik Steel Silo Investment Project

SWOT analysis is a tool used to evaluate investment decisions and identify potential risks and opportunities. The results of the analysis can enable the company to capitalize on opportunities using its strengths and help it develop strategies to deal with its weaknesses. However, SWOT analysis alone is not enough. Other financial analysis, market research and strategic planning should also be used to support investment decisions. SWOT analysis is an analysis method used to assess the strengths, weaknesses, opportunities and threats of a business.

A Birlik's SWOT analysis of the Steel Silo investment decision is given in Figure 7.

According to the Figure 7, this SWOT analysis offers a detailed overview of the factors that could influence the implementation and success of oil production in steel silos. It offers a foundation for strategic planning to optimize the strengths and opportunities while addressing weaknesses and mitigating threats. As with any strategy, these actions should be implemented and regularly reviewed to align with changing business conditions.

| Strengths | Weaknesses |
|---|---|
| Steel silos are durable and long-lasting, providing a suitable storage solution for oil production.<br>The silos maintain hygienic conditions, preserving the freshness and quality of the oils.<br>Steel silos are more resistant to external factors such as fire and pests.<br>The capacity of silos is usually high, which is advantageous for the production of large quantities of oil.<br>Steel silos facilitate storage and unloading processes and can be integrated with automated systems. | The cost of steel silos can be high, accessibility can be an issue, especially for small-scale businesses.<br>Installation and maintenance of silos may require some expertise, which can increase operating costs.<br>There may be limitations to the area where the silos will be located, which may affect operational planning.<br>Problems such as air leakage or corrosion may occur during the oil production process in the silos. |
| **Opportunities** | **Threats** |
| There is potential for growth in the oil production sector and steel silos can support this growth.<br>The integration of steel silos with technological advances can make storage and unloading processes more efficient.<br>Integration of silos with automated monitoring and control systems can improve operational efficiency.<br>Steel silos that provide healthy and hygienic storage conditions can provide a competitive advantage in terms of quality and reliability. | Other storage methods or alternative technologies can reduce the competitiveness of steel silos.<br>Other materials or storage methods used in oil production may be subject to environmental and regulatory restrictions.<br>Market price fluctuations or changes in demand may affect demand for oil production.<br>Technical failures or operational errors in silos can affect the production process and increase costs. |

**Figure 7.** SWOT analysis of oil production in steel silos.

## 4. Discussion

In the current economic conditions, where international competition is increasing, customer needs and expectations are diversifying, and the understanding of the global market is developing, businesses need to adapt to technological developments more easily. Investing in new technologies will accelerate businesses' adaptation to the new world economy. Businesses that invest in technology will provide both a competitive advantage for the company and significant contributions to the country's economy as long as they analyze their customers' demands better and manage their investments correctly.

There are many factors that are effective in the institutionalization stage of investment businesses. Firstly, it is necessary to plan the production well and pay attention to what factors will affect the production. All functions of the business should be well assimilated. It should not be forgotten that the business has certain responsibilities, not only profit-oriented, in line with its goals and objectives. The investment project to be made, the place to be established, and the technology to be used are the most important decision points of the investment business. When all the elements necessary for the establishment of investment businesses are considered, a successful investment will be inevitable.

After all stages are completed, the establishment analysis of the business should be done correctly. From this point of view, understanding the concept of investment, reflecting the correct values of feasibility studies that are important for the operation of a good business, and evaluating these types of studies by experienced people who have knowledge in this field will provide a very beneficial process for the business.

In this study, the investment process and applications of A Birlik, an agricultural enterprise located in the Thrace region, were examined. The study has revealed that technology investments are of critical importance for modern agricultural enterprises. Technological developments allow businesses to better analyze customer demands, facilitate their operations, and manage their investments effectively.

## 5. Conclusion

The net present value (NPV) of the investment made by A Birlik was calculated using the data obtained from the enterprise. The NPV of the investment was found to be 1,190,612.66 TL, indicating that the investment is highly efficient. The expectation for the NPV of the investment made by the enterprise is to be greater than zero. The NPV was calculated for each year from 2015 to 2022, with values ranging from 227,272.73 TL in 2015 to 373,250.90 TL in 2022.

The internal rate of return (IRR) for A Birlik's 8-year investment was calculated to be 27.82%. The IRR was calculated using data obtained from the enterprise. The IRR is the highest among the projects planned by the enterprise. The enterprise's expected profitability rate from the investment is 22%, but the IRR being 27.82% indicates the feasibility of the project.

The benefit-cost ratio is a performance measure that expresses the ratio between the returns and costs of a project or investment. This ratio is used to evaluate the net benefits of a project or investment on society or the enterprise.

The payback period was calculated to be 5.72 years using data obtained from the enterprise, meaning that the enterprise recouped the money it spent on this project after 5.72 years.

The annual equivalent cash flow method (YENAY) allows for the evaluation of a project or investment's cash flows by converting them into equivalent values over a certain period (usually annually). This method is widely used to analyze the economic profitability of a project or investment. The cash flows of the project or investment may be irregular, meaning there may not be the same amount of cash inflow or outflow each year. Special formulas and functions may need to be used in Excel to handle such irregular cash flows and calculate equivalent values accurately.

In today's economic conditions, where international competition is increasing, customer needs and expectations are differentiated, and global market understanding has developed, businesses need to adapt to technological developments more easily. Investing in new technologies will accelerate the adaptation of businesses to the new world economy. As long as the enterprises investing in technology analyze the demands of their customers better and manage their investments correctly, both the company will provide competitive advantage and significant contributions will be made to the national economy.

There are many factors that are effective in the institutionalization phase of investment enterprises. First of all, it is necessary to plan production well and pay attention to the factors that will affect production. All functions of the business must be well assimilated. In line with the goals and objectives of the business, it should be remembered that it is not only profit-oriented but also has certain responsibilities. Elements such as the investment project, the place to be established and the technology to be used are the most important decision point of the investment enterprise. When all the elements necessary for the establishment of investment enterprises are taken into consideration, a successful investment will be inevitable.

In this study, the investment process and practices of A Birlik, an agricultural enterprise located in the Thrace region, were examined. The study revealed that technology investments are critical for modern agribusinesses. Technological developments can enable enterprises to better analyze customer demands, facilitate their operations and manage their investments

effectively. This provides competitive advantage and offers added value to the national economy.

In the case of A Birlik, the company's investment in processing and storage facilities has greatly contributed to its growth and its ability to meet the country's agricultural product needs. Its certifications in quality management and environmental standards emphasize the importance of adhering to high standards.

Accounting serves as a foundational element in agricultural investment strategies, particularly in metrics like NPV and IRR, which are key indicators of an investment's viability. Within this context, the role of accounting goes beyond merely balancing books; it provides the structured methodology through which agribusinesses like A Birlik can rigorously evaluate their financial performance and sustainability measures. By using standardized accounting practices, A Birlik was able to calculate an NPV of 1,190,612.66 TL and an IRR of 27.82%, thereby substantiating the feasibility and high efficiency of the investment. As the sector continues to evolve, particularly in relation to sustainability and technology, a comprehensive accounting framework remains critical for validating investment decisions, assessing risks, and achieving long-term economic and environmental objectives.

It is essential that agricultural enterprises adopt sustainable practices. A Birlik has waste treatment units that comply with European standards and shows that it is an enterprise that is aware of its environmental responsibilities. Investing in environmentally friendly technologies and practices is not only beneficial for the business, but also for society and ecology.

Consequently, investment in new technologies, comprehensive planning, a clear understanding of business functions and a commitment to sustainability are critical to the success of agribusinesses in today's globalized economy. This research contributes to the understanding of the investment process in the agricultural sector and emphasizes the need for continuous adaptation and innovation in business practices.

Recommendations based on the findings of the study are as follows:

- Agribusinesses should invest in continuous training and development programs for their employees to remain competitive.
- Collaborative relationships with stakeholders, including suppliers, government and society, are important for sustainable growth.
- Future research should investigate the long-term impact of technology investments on agricultural productivity and sustainability.

**Author Contributions**

The percentage of the author(s) contributions is presented below. All authors reviewed and approved the final version of the manuscript.

| | M.H.Y. | A.A.Ç. |
|---|---|---|
| C | 50 | 50 |
| D | 100 | |
| S | | 100 |
| DCP | 50 | 50 |
| DAI | 50 | 50 |
| L | 50 | 50 |
| W | 50 | 50 |
| CR | 50 | 50 |
| SR | 50 | 50 |
| PM | 50 | 50 |
| FA | 50 | 50 |

C=Concept, D= design, S= supervision, DCP= data collection and/or processing, DAI= data analysis and/or interpretation, L= literature search, W= writing, CR= critical review, SR= submission and revision, PM= project management, FA= funding acquisition.

**Conflict of Interest**

The authors declared that there is no conflict of interest.

**Ethical Consideration**

Ethics committee approval was not required for this study because of there was no study on animals or humans.

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## References

Acar M. 2003. Tarımsal işletmelerde finansal performans analizi. Erciyes Üniv İkt İdar Bilim Fak Dergi, 20: 21-37.

Asadzadeh A, Sikder SK, Mahmoudi F, Kötter T. 2014. Assessing site selection of new towns using topsis method under entropy logic: A case study: New towns of Tehran metropolitan region (TMR). Environ Manag Sustain Devel, 3(1): 123.

Belhadi A, Kamble SS, Mani V, Benkhati I, Touriki FE. 2021. An ensemble machine learning approach for forecasting credit risk of agricultural SMEs' investments in agriculture 4.0 through supply chain finance. Ann Oper Res, DOI: 10.1007/s10479-021-04366-9.

Bodie Z, Kane A, Marcus A. 2014. Ebook: Investments-global edition: McGraw Hill, Dunfermline, UK, pp: 2433.

Bouri E, Gupta R, Wang S. 2022. Nonlinear contagion between stock and real estate markets: International evidence from a local Gaussian correlation approach. Int J Finance Econ, 27(2): 2089-2109. DOI: 10.1002/ijfe.2261.

Cheng F, Lin M, Yüksel S, Dinçer H, Kalkavan H. 2021. A hybrid hesitant 2-tuple ivsf decision making approach to analyze PERT-based critical paths of new service development process for renewable energy investment projects. IEEE Access, 9: 3947-3969. DOI: 10.1109/Access.2020.3048016.

Di Matteo F, Schoneveld G. 2016. Agricultural investments in Mozambique: An analysis of investment trends, business models and social and environmental conduct (Working Paper No. 201). Center for International Forestry Research,

Bogor, Endonezia, pp: 28.

Gedik T. Akyüz K. Akyüz İ. 2005. Yatırım projelerinin hazırlanması ve değerlendirilmesi iç karlılık oranı ve net bugünkü değer yöntemlerinin incelenmesi. Zonguldak Karaelmas Üniv, Bartın Orman Fak Derg, 7: 51 – 61.

Graham A. 2019. Canadian public-sector financial management. Queen's School of Policy Studies, Canada, Ottava, 3rd ed., pp: 523.

Janoschka M, Alexandri G, Ramos HO, Vives-Miró S. 2020. Tracing the socio-spatial logics of transnational landlords' real estate investment: Blackstone in Madrid. European Urban Regio Stud, 27(2): 125-141. DOI: 10.1177/0969776418822061.

Kadigi RM, Kashaigili JJ, Sirima A, Kamau F, Sikira A, Mbungu W. 2017. Land fragmentation, agricultural productivity and implications for agricultural investments in the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) region, Tanzania, pp: 27.

Kalinina O, Buniak V, Golubnichaya G, Kapustina I. 2019. Economic features of investment nature of energy-saving projects in Russia. E3S Web Conf, 110: 9. DOI: 10.1051/e3sconf/201911002089.

Li Z, Madanu S. 2009. Highway project level life-cycle benefit/cost analysis under certainty, risk, and uncertainty: methodology with case study. J Transport Eng, 135(8): 516-526.

Mulska O, Kloba T. 2021. Decomposition of financial capacity of ukrainian households in the conditions of changing economic environment: Regional Section. Three Seas Econ J, 2(3): 68-77.

Reilly FK, Brown KC. 2011. Investment analysis and portfolio management. South Western Cengage Learning, Mason, US, pp: 1057.

Ruegg R, Marshall H. 2013. Building economics: theory and practice. Springer, New York, US, pp: 485.

Shafiee M, Alghamdi A, Sansom C, Hart P, Encinas-Oropesa A. 2020. A through-life cost analysis model to support investment decision-making in concentrated solar power projects. Energies, 13(7): 1553.

Silva CSJ, Oliveira AD, Rezende JLP, Mello JM, Scolforo JRS. 2012. Economic feasibility and rotation age for stands of candeia (Eremanthus erythropappus). Cerne, 18: 695-706.

Tiwari AK, André C, Gupta R. 2020. Spillovers between US real estate and financial assets in time and frequency domains. J Property Invest Finance, 38(6): 525-537. DOI: 10.1108/JPIF-08-2019-0110.

Trianni A, Cagno E, Marchesani F, Spallina G. 2017. Classification of drivers for industrial energy efficiency and their effect on the barriers affecting the investment decision-making process. Energy Efficiency, 10(1): 199-215. DOI: 10.1007/s12053-016-9455-6.

Valencia WA, Marín Chávez OC, Lara Carhuancho MG. 2020. Investment projects: definition from the process perspective. Cuadernos de Administración, 36(66): 161-171.

Vorley B, Cotula L, Chan MK. 2012. Tipping the Balance: Policies to shape agricultural investments and markets in favour of small-scale farmers. Oxfam, Maiduguri, Nigeria, pp: 88.

Zhang D, Cai J, Liu J, Kutan AM. 2018. Real estate investments and financial stability: evidence from regional commercial banks in China. European J Finance, 24(16): 1388-1408. DOI: 10.1080/1351847X.2016.1154083.

Zis T, Angeloudis P, Bell MG, Psaraftis HN. 2016. Payback period for emissions abatement alternatives: role of regulation and fuel prices. Transport Res Record, 2549(1): 37-44.