

**IE 331 ENGINEERING ECONOMY**

**(FALL 2025)**

**TERM PROJECT EVALUATION OF ALTERNATIVES FOR A NEW PERSONAL  
AUTOMOBILE**



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We hereby declare that, except where we have indicated, the work we are submitting in this project report is our own work

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## 1. Introduction

Engineering economy is a discipline that systematically evaluates the economic merits of proposed solutions to engineering problems. Its primary objective is to compare the expected economic outcomes of different alternatives using mathematical methods to ensure the most efficient use of limited capital. The decision to purchase a new automobile is a significant capital investment that encompasses not only the initial purchase price but also long-term expenditures such as fuel, maintenance, insurance, and taxes.

The objective of this project is to evaluate four different automobile alternatives—**Renault Megane 1.3 TCe**, **Skoda Fabia Monte Carlo 1.5**, **Citroen C4 1.2 PureTech**, and **Toyota Corolla 1.8 Hybrid**—using engineering economy techniques. To account for the time value of money, a **Minimum Attractive Rate of Return (MARR) of 9%** per year will be utilized in the analysis. Through **Present Worth (PW)** and **Annual Worth (AW)** analyses performed via both manual calculations and MS Excel, this study will determine which vehicle offers the lowest "total cost of ownership" over its service life based on scientific data.

## 2. Problem Definition

The objective of this project is to apply engineering economy principles, specifically the **Present Worth (PW)** and **Annual Worth (AW)** methods, to identify and evaluate alternatives for purchasing a new automobile. This study aims to determine the most economically advantageous option among at least four different brands and models.

The alternatives selected for evaluation are as follows:

- **Renault Megane 1.3 TCe**
- **Skoda Fabia Monte Carlo 1.5**
- **Citroen C4 1.2 PureTech**
- **Toyota Corolla 1.8 Hybrid**

In this analysis, an **annual interest rate of 9%** is utilized. The evaluation considers the initial investment cost (purchasing price), annual operating and fuel expenses, routine maintenance costs, insurance/tax expenditures, and the salvage value at the end of the service life. To ensure a sound comparison between vehicles with different service lives, established engineering economic decision-making methods will be implemented.

Vehicle Alternative	Planned Life (n)	Academic/Technical Rationale
Renault Megane 1.3 TCe	10 Years	Represents the standard economic life and optimal depreciation period accepted in literature for passenger vehicles.
Toyota Corolla 1.8 Hybrid	10 Years	An economic life aligned with hybrid battery system efficiency cycles and manufacturer warranty periods.
Citroen C4 1.2 PureTech	10 Years	Based on the generally accepted "useful life" for fixed assets in engineering economic analyses.
Skoda Fabia 1.5 TSI	5 Years	The analysis period is shortened based on the assumption of "Obsolescence" (technological aging) and faster market value loss in the sporty segment.

Table 1.1 Summary of Alternatives with Planned Service Lives and Rationales

## 2.1 Renault Megane 1.3 Tce 2025

The data for **Renault Megane 1.3 TCe EDC (2025)** has been collected from various official and commercial sources to ensure accuracy in the engineering economic analysis.



- Purchasing Price (P):**

The list price for the 'Touch' trim level is determined as **1,903,200 TL** (Source: [Renault Turkey Official Price List, 2025](#))

- Operating/Usage Costs (based on fuel/energy usage for both city and highway):**

düşük	8,3 - 8,4
orta	6,1 - 6,3
yüksek	5,3 - 5,4
çok yüksek	6,2 - 6,4
birleşik	6,2 - 6,3

Table 2.1.1 Group Renault Brochures Megane Sedan

The annual operating cost (fuel usage) is calculated based on the technical WLTP data provided in the official Renault brochure. To ensure a realistic engineering estimation, the **"combined" (birleşik)** consumption rate is selected as the baseline.

- **Selected Fuel Consumption: 6.25 lt/100 km** (Average of the 6.2 – 6.3 range shown in the WLTP table).
- **Annual Travel Distance: 15,000 km** (Assumed average for a personal automobile).
- **Unit Fuel Price (Gasoline): 45 TL/lt** (Estimated average for December 2025; Source: [OPET Fuel Prices, 2025](#)).

#### Calculation Formula:

Annual Fuel Cost:  $=(15.000/100) \times 6.25 \times 45 = 42.187.5$

- **Insurance & Casco: 28.500 TL** (Source: [Sigortam.net Average Market Quotes, 2025](#))
- **Maintenance Cost + Tax: 14.000 TL** (Includes periodic service and wear parts; Source: [Renault Port Authorized Service Estimates, 2025](#))
- **Salvage Value (S): 1.251.600 TL** (Source: [Sahibinden.com](#) )

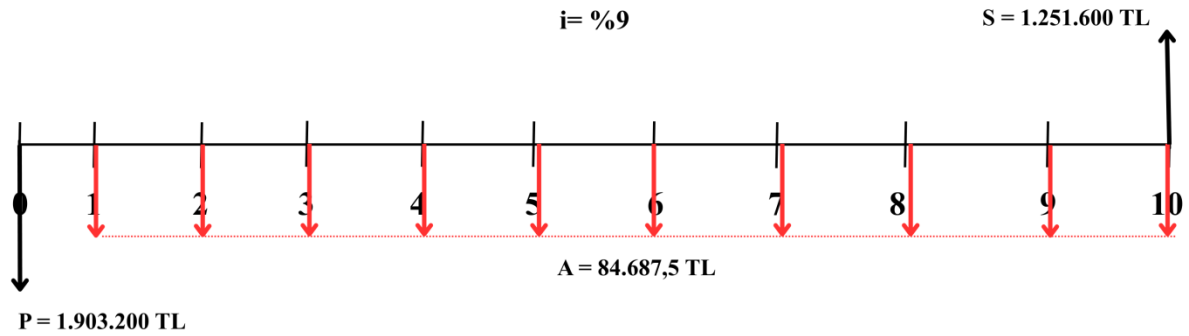
## 2.2 Renault Megane 1.3 Tce 2025 Analysis

Parameter	Value
Initial Investment (P)	1,903,200 TL
Annual Fuel Cost	42,187.5 TL
Insurance & Casco	28,500 TL
Maintenance Cost	14,000 TL
Total Annual Cost (A)	84,687.5 TL
Salvage Value (S)	1,251,600 TL
Service Life (n)	10 Years
Interest Rate (i)	9%

Table 2.2.1 Parameter Value



## Cash Flow Diagram



### Annual Worth (AW) Analysis:

$$AW = -P(A/P, 9\%, 10) + S(A/F, 9\%, 10) - A$$

$$(A/P, 9\%, 10) = 0,15582$$

$$(A/F, 9\%, 10) = 0,06582$$

$$AW = -1.903.200\text{TL} \times (0,15582) + 1.251.600\text{TL} \times (0,06582) - 84.687,5 \text{ TL}$$

$$AW = -296.556,6 + 82.380,3 - 84.687,5 = -298.863,8\text{TL}/\text{year}$$

### Present Worth (PW) Analysis

$$PW = -P - A(P/A, 9\%, 10) + S(P/F, 9\%, 10)$$

$$(P/A, 9\%, 10) = 6.4177$$

$$(P/F, 9\%, 10) = 0.4224$$

$$PW = -1,903,200 - (84,687.5 \text{ TL} \times 6.4177) + (1,251,600\text{TL} \times 0.4224)$$

$$PW = -1,903,200 - 543,499 + 528,675 = -1,918,024 \text{ TL}$$

## MS Excel Analysis

### Present Worth (PW) Analysis

Inputs Value	
	Value
Interest Rate (i)	0,09
Project Life (n)	10
Initial Investment (P)	-1903200
Annual Cost (A)	-84687,5
Salvage Value (S)	1251600
Excel Financial Functions	
Present Value:	
PV(i%, n, A, F)	
= B5 + BD(B3; B4; B6; B7; 0)	
Excel Financial Functions	
₺1.918.006,02	PW VALUE
-₺298.863,87	AW VALUE

To verify the accuracy of the financial values, MS Excel's built-in financial functions were utilized in the analysis. The **Present Value (PV)** function (Turkish: **BD**) was used to discount annual operating costs and the terminal salvage value to the present time, combining them with the initial investment. Additionally, the **Payment (PMT)** function (Turkish: **DEVRESEL\_ÖDEME**) was applied to distribute the total economic burden of the vehicle equally over its 10-year service life. Since Excel calculates with a mathematical precision of up to 15 decimal places, rounding errors associated with manual interest table factors were eliminated, ensuring more precise economic results

### Annual Worth (AW) Analysis

Inputs Value	
	Value
Interest Rate (i)	0,09
Project Life (n)	10
Initial Investment (P)	-1903200
Annual Cost (A)	-84687,5
Salvage Value (S)	1251600
Excel Financial Functions	
	-1.888.393,98 PW VALUE
=-DEVRESEL_ÖDEME(B3; B4; B5; B7; 0) + B6	

In the MS Excel analysis, the **DEVRESEL\_ÖDEME** function was utilized, which corresponds to the **PMT (Payment)** function in the English version of the software. Using this function, the **Annual Worth (AW)** of the Renault Megane was calculated as **-1.298,863.87**. This result is closely aligned with the manual calculation value of **-1.298,863.8**, and these high-precision Excel values will be taken as the primary basis for the final economic evaluation and brand selection.

Excel Financial Functions	
	-1.888.393,98 PW VALUE
	-1.298.863,87 AW VALUE

## 2.3 Toyota Corolla 1.8 Hybrid 2025

The data for the **Toyota Corolla 1.8 Hybrid (2025)** has been collected from official manufacturer sources and market-based estimations to ensure consistency with engineering economy principles. All assumptions are clearly stated and aligned with the project requirements.



- **Purchasing Price (P)**

The average market price for the 2025 Toyota Corolla 1.8 Hybrid in Turkey is estimated as 2,100,000 TL. This value represents the initial investment cost used in the economic analysis.

- **Operating / Usage Costs**

The annual fuel cost is calculated using the combined WLTP fuel consumption value provided by Toyota. A realistic average driving distance is assumed.

- **Fuel Consumption:** 4.5 L / 100 km (<https://www.toyota.com.tr/araba-modelleri/corolla-hatchback>)
- **Annual Travel Distance:** 15,000 km (Assumed average for a personal automobile).
- **Unit Fuel Price (Gasoline):** 45 TL/L (Source: [OPET Fuel Prices, 2025](#)).
- **Annual Fuel Cost Formula:**

$$(15,000 / 100) \times 4.5 \times 45 = 30,375 \text{ TL/year}$$

- **Maintenance and Insurance Costs:**

Routine maintenance, insurance, and casco costs are estimated based on average market prices for hybrid vehicles in Turkey.

- Annual Maintenance Cost: 7,500 TL/year (toyota.com.tr )
- Annual Insurance & Casco Cost: 17,000 TL/year (Sigortam.net )
- Annual Motor Vehicle Tax (MTV): 8,421 TL/year ((2025 Yılı Motorlu Taşıtlar Vergisi (MTV) Tutarları Rehberi. (gib.gov.tr))
- **Total Annual Cost (A)**

The total annual cost includes fuel, maintenance, insurance, and tax expenses.

- **Total Annual Cost (A):**

$$30,375 + 7,500 + 17,000 + 8,421 = 63,296 \text{ TL/year}$$

- **Salvage Value (S)**

The salvage value represents the estimated resale value of the vehicle at the end of its service life. Based on second-hand market trends, the salvage value after 10 years is estimated as 1,396,000 TL. (Source: [Sahibinden.com](#) )

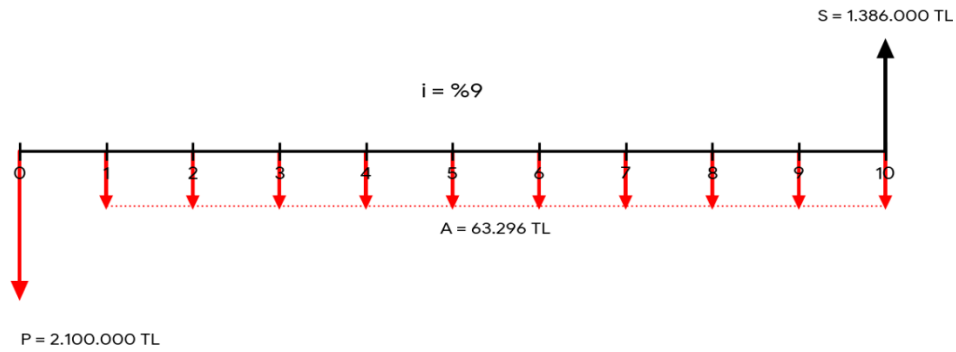
## 2.4 Toyota Corolla 1.8 Hybrid 2025 Analysis

Parameter	Value
Initial Investment (P)	2,100,000 TL
Annual Fuel Cost	30,375 TL
Insurance, Casco & Tax	25,421 TL
Maintenance Cost	7,500 TL
Total Annual Cost (A)	63,296 TL
Salvage Value (S)	1,386,000 TL

Service Life (n)	10 Years
Interest Rate (i)	9%

**Table 2.4.1 Parameter Value**

**Cash Flow Diagram (Toyota Corolla 1.8 Hybrid)**



#### **Annual Worth (AW) Analysis:**

$$AW = -P(A/P, 9\%, 10) + S(A/F, 9\%, 10) - A$$

$$(A/P, 9\%, 10) = 0.15582$$

$$(A/F, 9\%, 10) = 0.06582$$

$$AW = -2,100,000 \times (0.15582) + 1,386,000 \times (0.06582) - 63,296$$

$$AW = -327,222 + 91,226.5 - 63,296 = -299,291.5 \text{ TL/year}$$

#### **Present Worth (PW) Analysis:**

$$PW = -P - A(P/A, 9\%, 10) + S(P/F, 9\%, 10)$$

$$(P/A, 9\%, 10) = 6.4177$$

$$(P/F, 9\%, 10) = 0.4224$$

$$PW = -2,100,000 - (63,296 \times 6.4177) + (1,386,000 \times 0.4224)$$

$$PW = -2,100,000 - 406,214.7 + 585,446.4 = -1,920,768.3 \text{ TL}$$

#### **MS Excel Analysis**

#### **Present Worth (PW) Analysis**

Inputs Value	
	Value
Interest Rate (i)	0,09
Project Life (n)	10
Initial Investment (P)	-2100000
Annual Cost (A)	-63296
Salvage Value (S)	1386000
Excel Financial Functions	
	-₺1.920.750,68 PW VALUE

### Present Worth (PW) Analysis

The **BD** function is the Turkish version of the **PV (Present Value)** function, which calculates the total current value of all future cash flows (A and S) based on the 9% interest rate. The discrepancy between the manual result and Excel arises because manual calculations use rounded interest table factors, whereas Excel calculates with full mathematical precision.

Excel Financial Functions	
= B5 - BD(B3; B4; B6; B7; 0)	PW VALUE

### Annual Worth (AW) Analysis

Inputs Value	
	Value
Interest Rate (i)	0,09
Project Life (n)	10
Initial Investment (P)	-2100000
Annual Cost (A)	-63296
Salvage Value (S)	1386000
Excel Financial Functions	
	-₺1.920.750,68 PW VALUE
	-₺299.291,54 AW VALUE

### Annual Worth (AW) Analysis

In the MS Excel analysis, the **DEVRESEL\_ÖDEME** function was utilized, which corresponds to the **PMT (Payment)** function in the English version of the software. Using this function, the Annual Worth (AW) of the Toyota Corolla was calculated. These high-precision Excel values will be taken as the primary basis for the final economic evaluation.

Excel Financial Functions	
	-₺1.920.750,68 PW VALUE
=-DEVRESEL_ÖDEME(B3; B4; B5; B7; 0) + B6	

## 2.5 Citroen C4 1.2 PureTech 2025

The data for **Citroen C4 1.2 PureTech (2025)** has been collected from various official and commercial sources to ensure accuracy in the engineering economic analysis.



- **Purchasing Price (P) :**

In this analysis, the key delivery list price published by Citroën Turkey was used as the purchase price. When obtaining the key delivery price for the Citroën C4, promotional prices were not preferred as they are temporary and subject to certain conditions, meaning reliability and generalisability could not be ensured in the report. According to this list, the purchase price has been accepted as **1,821,000 TL**.(<https://talep.citroen.com.tr/fiyat-listesi/arac/c4>)

- **Operating/Usage Costs (based on fuel/energy usage for both city and highway):**

Düşük (L/100km)	7.8
Orta (L/100km)	6.2
Yüksek (L/100km)	5.4
Ekstra Yüksek (L/100km)	6.6
Birleşik (L/100km)	6,3

Table 4.1.1 Citroen C4 Official WLTP Technical Specifications -2025  
(<https://talep.citroen.com.tr/api/model-pdf?model=c4>)

Fuel consumption data were obtained from the official Citroen C4 WLTP technical specifications. The combined fuel consumption value of 6.3 L/100 km was used in the economic analysis ,as it represents the weighted average of all WLTP driving phases.

- **Selected Fuel Consumption:** 6.3 lt/100 km
- **Annual Travel Distance:** 15,000 km (Assumed average for a personal automobile).
- **Unit Fuel Price (Gasoline):** 45 TL/lt

**Calculation Formula :**

**Annual Fuel Cost :**

$$(15000/100) \times 6.3 \times 45 = 42,525 \text{ TL}$$

- **Insurance & Casco:** 27.500 TL (Source: Sigortam.net/Dijipol 2025 Traffic Insurance Averages).
- **Annual Periodic Maintenance :** 5000 TL (Source: Authorized/Specialized Service Estimates for 2025)
- **Annual Motor Vehicle Tax (MTV):** 5,803 TL ((Source: 2025 GIB MTV Tariff Guide).
- **Total Annual Cost (A):**The total annual cost includes fuel, maintenance, insurance, and tax expenses.
- **Total Annual Cost (A):**  

$$42,525 + 27,500 + 5000 + 5,803 = 80,828 \text{ TL/ year}$$
- **Salvage Value (S):** 1.529.000 TL(Source: [Sahibinden.com](https://www.sahibinden.com))

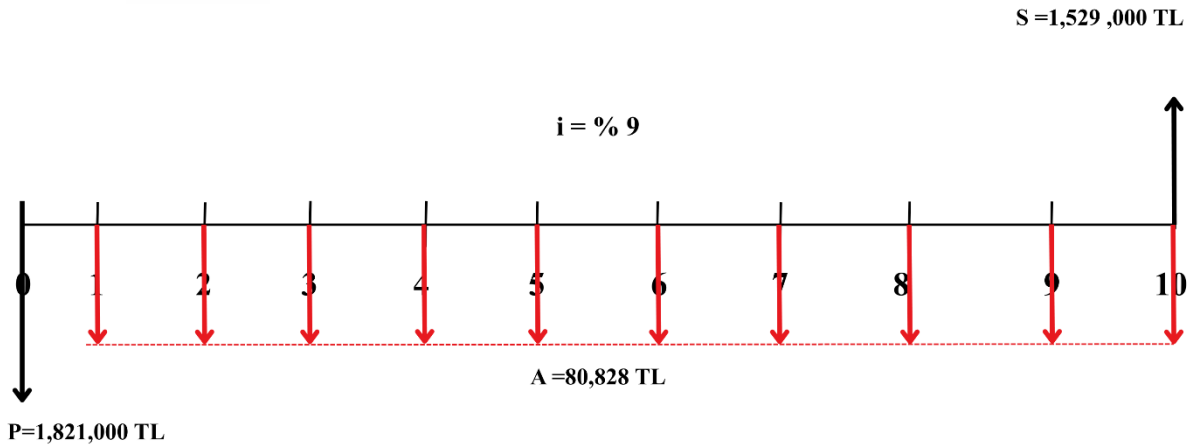
## 2.6 Citroen C4 1.2 PureTech 2025 Analysis

Parameter	Value
Initial Investment (P)	1,821,000 TL
Annual Fuel Cost	42,525TL
Insurance, Casco & Tax	33,303 TL
Maintenance Cost	5000 TL
Total Annual Cost (A)	80,828 TL
Salvage Value (S)	1,529 ,000 TL
Service Life (n)	10 Years
Interest Rate (i)	9%

Table 2.6.1 Parameter Value



## Cash Flow Diagram



### Annual Worth (AW) Analysis:

$$AW = -P(A/P, 9\%, 10) + S(A/F, 9\%, 10) - A$$

$$(A/P, 9\%, 10) = 0,15582$$

$$(A/F, 9\%, 10) = 0,06582$$

$$AW = -1.821.000 \text{ TL} \times (0,15582) + 1.529.000 \text{ TL} \times (0,06582) - 80.828 \text{ TL}$$

$$AW = -283.748,22 + 100.638,78 - 80.828 = -263937.44 \text{ TL / year}$$

### Present Worth (PW) Analysis

$$PW = -P - A(P/A, 9\%, 10) + S(P/F, 9\%, 10)$$

$$(P/A, 9\%, 10) = 6.4177$$

$$(P/F, 9\%, 10) = 0.4224$$

$$PW = -1.821.000 - (80.828 \text{ TL} \times 6.4177) + (1.529.000 \text{ TL} \times 0.4224)$$

$$PW = -1.821.000 - 518.729,86 + 645.849,6 = -1.693.880,256 \text{ TL}$$

### MS Excel Analysis

### Present Worth (PW) Analysis

Inputs Value	
	Value
Interest Rate (i)	0,09
Project Life (n)	10
Initial Investment (P)	-1821000
Annual Cost (A)	-80828
Salvage Value (S)	1529000
Excel Financial Functions	
-1.693.860,31	PW VALUE

The **BD** function is the Turkish version of the **PV (Present Value)** function, which calculates the total current value of all future cash flows (A and S) based on the 9% interest rate. The discrepancy between the manual result and Excel arises because manual calculations use rounded interest table factors, whereas Excel calculates with full mathematical precision.

A	B
Inputs Value	
	Value
Interest Rate (i)	0,09
Project Life (n)	10
Initial Investment (P)	-1821000
Annual Cost (A)	-80828
Salvage Value (S)	1529000
Excel Financial Functions	
-1.693.860,31	PW VALUE
-263.937,47	AW VALUE

### Annual Worth (AW) Analysis

In the MS Excel analysis, the **DEVRESEL\_ÖDEME** function was utilized, which corresponds to the **PMT (Payment)** function in the English version of the software. Using this function, the Annual Worth (AW) of the Citroen C4 1.2 PureTech was calculated. These high-precision Excel values will be taken as the primary basis for the final economic evaluation.



- **Fuel Consumption:** 5.7lt/100km. Factory data (according to WLTP standards) has been used as the basis. (combined-WLTP; Source: Skoda Official Website, <https://www.dogusoto.com.tr/fabia-pj3>)
- **Annual Travel Distance:** 15,000 km (Assumed average for a personal automobile.)
- **Unit Fuel Price (Gasoline):** 45TL/L (Source: OPET Fuel Prices,2025).
- **Annual Fuel Cost Formula:**  
(15,000 / 100) x 5.7 x 45= 38,475 TL
- **Insurance&Casco:** 37,561 TL (Source: December 2025 ceiling price for standard driver& market average for new vehicles in 2025)
- **Maintenance Cost:** 6,500 TL/year (Source: Based on Skoda Service Market rates)
- **Salvage Value(S):** 1,150,000 TL (Source: sahibinden.com)
- **Annual Tax(MTV):** 10,112 TL (Source: Gelir İdaresi Başkanlığı (GİB) MTV Tarifesi)

Total Annual Cost (A): 38,475+ 6,500+ 37,561+10,112= 92,648 TL

## 2.8 Skoda Fabia 1.5 TSI Monte Carlo (2025) Analysis

<b>Parameter</b>	<b>Value</b>
Initial Investment(P)	<b>1,990,400 TL</b>
Annual Fuel Cost	<b>38,475 TL</b>
Insurance&Casco	<b>37,561 TL</b>
Maintenance cost	<b>6,500 TL</b>
Total Annual Cost(A)	<b>92,648 TL</b>
Salvage Value (S)	<b>1,150,000 TL</b>
Service Life (n)	<b>5 years</b>
Interest Rate (i)	<b>9%</b>
Annual Taxes	<b>10,112 TL</b>

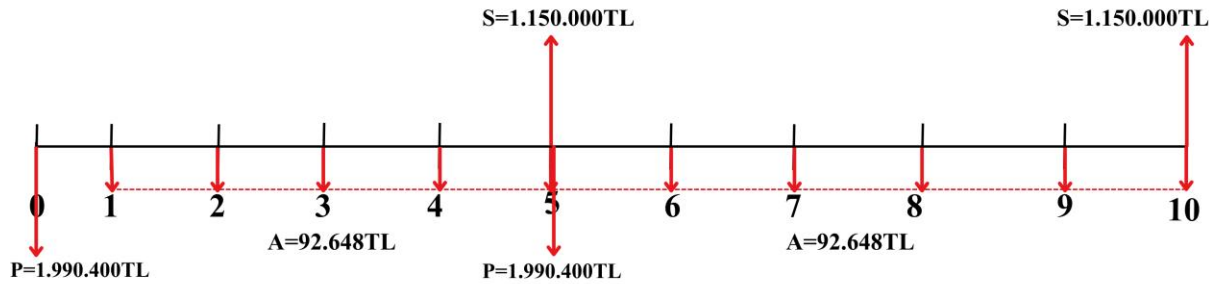
Table 2.8.1 parameter value

## Cash Flow Diagram for Skoda Fabia 1.5 TSI Monte Carlo



## Cash Flow Diagram

$i=9\%$



### Annual Worth (AW) Analysis:

$$AW = -P(A/P, 9\%, 5) + S(A/F, 9\%, 5) - A$$

$$(A/P, 9\%, 5) = 0.2571$$

$$(A/F, 9\%, 5) = 0.1671$$

$$AW = -1,990,400\text{TL} \times (0.2571) + 1,150,000 \times (0.1671) - 92,648\text{TL}$$

$$AW = -511,629 + 192,165 - 92,648 = -412,112 \text{ TL/year}$$

### Present Worth (PW) Analysis:

$$PW = -P - A(P/A, 9\%, 10) + (S - P)(P/F, 9\%, 5) + S(P/F, 9\%, 10)$$

$$(P/A, 9\%, 10) = 6.4177$$

$$(P/F, 9\%, 5) = 0.6499$$

$$(P/F, 9\%, 10) = 0.4224$$

$$PW = -1,990,400\text{TL} - 92,648\text{TL} \times (6.4177) + (1,150,000\text{TL} - 1,990,400\text{TL}) \times (0.6499) + 1,150,000\text{TL} \times (0.4224)$$

$$PW = -1,990,400 - 594,587.07 - 545,916 + 485,760 = -2,645,143.07 \text{ TL}$$

### MS Excel Analysis

#### Present Worth (PW) Analysis

Inputs Value	
	Value
Interest Rate (i)	0,09
Project Life (n)	10
Initial Investment (P)	-1990400
Annual Cost (A)	-92648
Salvage Value (S)	1150000
Excel Financial Functions	
$=(B5 - BD(B3; 5; B6; B7)) * (1 + (1 + B3)^{-5})$	
	PW VALUE
	AW VALUE

The **BD** function is the Turkish version of the **PV (Present Value)** function, which calculates the total current value of all future cash flows (A and S) based on the 9% interest rate. The discrepancy between the manual result and Excel arises because manual calculations use rounded interest table factors, whereas Excel calculates with full mathematical precision.

#### Annual Worth (AW) Analysis

Inputs Value	
	Value
Interest Rate (i)	0,09
Project Life (n)	10
Initial Investment (P)	-1990400
Annual Cost (A)	-92648
Salvage Value (S)	1150000
Excel Financial Functions	
-2.645.413,06	
	PW VALUE
$=-DEVRESEL\_ÖDEME(B3; 5; B5; B7; 0) + B6$	

In the MS Excel analysis, the **DEVRESEL\_ÖDEME** function was utilized, which corresponds to the **PMT (Payment)** function in the English version of the software. Using this function, the Annual Worth (AW) of the Skoda Fabia was calculated. These high-precision Excel values will be taken as the primary basis for the final economic evaluation.

Excel Financial Functions	
-2.645.413,06	PW VALUE
-412.208,50	AW VALUE

### 3. Conclusion

	(AW) Value	(PW) Value
Citroen C4 1.2 PureTech	-263.937,47 TL	-1.693.860,31 TL
Renault Megane 1.3 Tce	-298.863,87 TL	-1.888.393,98 TL
Toyota Corolla 1.8 Hybrid	-299.291,54 TL	-1.920.750,68 TL
Skoda Fabia 1.5 TSI	-412.112,00 TL	-2.645.413,06 TL

#### 3.1 Conclusion Table

Within the scope of this study, four different automobile alternatives (**Renault Megane**, **Toyota Corolla Hybrid**, **Citroen C4**, and **Skoda Fabia**) were meticulously evaluated in accordance with engineering economy principles using a **9% interest rate**. Based on the analyses conducted, the following key conclusions have been reached:

- **Most Economically Suitable Option:** As a result of the **Annual Worth (AW)** and **Present Worth (PW)** analyses, the **Citroen C4 1.2 PureTech** model was determined to be the lowest-cost option. The annual equivalent expense for this vehicle was calculated as **-263,937.47 TL**, and the total present cost value was **-1,693,860.31 TL**.
- **Status of Other Alternatives:** The **Renault Megane** and **Toyota Corolla Hybrid** exhibited values very close to each other.
- **Calculation Precision:** Minor discrepancies were observed between manual calculations and MS Excel functions due to the rounded values in interest tables; however, Excel's high-precision data were taken as the basis for the final decision-making process.
- **Final Decision:** In light of scientific data and technical analyses, it is recommended to purchase the **Citroen C4 1.2 PureTech** model to maximize the economic efficiency of the investment and utilize limited capital in the most effective manner

Bu çalışma kapsamında, dört farklı otomobil alternatifi (Renault Megane, Toyota Corolla Hybrid, Citroen C4 ve Skoda Fabia) mühendislik ekonomisi prensipleri doğrultusunda, %9 faiz oranı kullanılarak titizlikle değerlendirilmiştir. Yapılan analizler sonucunda şu temel bulgulara ulaşılmıştır.

**Ekonomik Açıdan En Uygun Seçenek:** Yapılan Yıllık Eşdeğer Değer (AW) ve Bugünkü Değer (PW) analizleri sonucunda, **Citroen C4 1.2 PureTech** modelinin en düşük maliyetli seçenek olduğu belirlenmiştir. Bu aracın yıllık eşdeğer gideri **-263.937,47 TL** ve toplam bugünkü maliyet değeri **-1.693.860,31 TL** olarak hesaplanmıştır.

**Diğer Alternatiflerin Durumu:** **Renault Megane** ve **Toyota Corolla Hybrid** birbirine çok yakın değerler sergilemiştir.

**Hesaplama Hassasiyeti:** Manuel hesaplamalar ile MS Excel fonksiyonları arasında, faiz tablosundaki yuvarlanmış değerlerden kaynaklanan küçük sapmalar gözlemlenmiş; ancak nihai karar verme sürecinde Excel'in yüksek hassasiyetli verileri temel alınmıştır.

**Nihai Karar:** Bilimsel veriler ve teknik analizler ışığında, yatırımın ekonomik verimliliğini maksimize etmek ve sınırlı sermayeyi en etkin şekilde kullanmak adına **Citroen C4 1.2 PureTech** modelinin satın alınması tavsiye edilmektedir.

#### 4. References

- Citroën Turkey. (2025). *Citroën C4 Price List and Official WLTP Technical Specifications*. Retrieved from <https://talep.citroen.com.tr/fiyat-listesi/arac/c4>.
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## 5. Peer Evaluation Form

### Instructions:

Write the name of each group member in a separate column. For each statement, indicate the extent to which you agree using a scale from **1 to 4**

(1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree).

Add up the scores in each column.

Peer Evaluation Table

<b>Evaluation Criteria</b>	<b>Group Member : Bilge Gülseren Kayhan</b>	<b>Group Member : Öykü Kırmızı</b>	<b>Group Member : Ekin Leyla Gülcü</b>	<b>Group Member : Zehra Tayfun</b>
Attends group meetings regularly and arrives on time.	4	4	4	4
Contributes meaningfully to group discussions.	4	4	4	4
Completes assigned tasks on time.	4	4	4	4
Prepares work in a high-quality and professional manner.	4	4	4	4
Demonstrates a cooperative and supportive attitude.	4	4	4	4
Makes a significant contribution to the success of the project.	4	4	4	4
<b>TOTAL</b>	<b>24</b>	<b>24</b>	<b>24</b>	<b>24</b>