



EcoWheel

High-Level Feasibility Study

Submitted to:

The Ministry of Digital Economy and Entrepreneurship

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Founders and investors considering this project are advised to conduct further analysis on projected adoption rates, development costs, and ongoing operational expenses. This additional scrutiny will help mitigate potential risks related to technology challenges, changes in regulations, market penetration, and competitive pressures.

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A National Entrepreneurship Policy Project



Ministry of Digital Economy
and Entrepreneurship



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Table of Contents

Table of Tables	3
Table of Figures	3
Executive Summary	4
1. Introduction	4
2. Market Analysis	5
3. Business Model.....	7
4. Technical Analysis.....	9
5. Financial Analysis.....	11
5.1 Financial Study Assumptions	11
5.2 Financial Study:	12
5.2.1 Projected Working Capital	12
5.2.2 Project Initial Cost	12
5.2.3 Projected Income Statement	13
5.2.4 Projected Free Cash Flow Statement	14
5.3 Sensitivity Analysis.....	15
6. Integration with Other Sectors.....	15
7. Entrepreneur Persona	16
8. Stakeholders	16
9. Risk Assessment and Mitigation	16
10. Conclusion.....	18

Table of Tables

Table 1: Monthly and Annual Revenue Calculation.....	8
Table 2: Revenue projection	8
Table 3: Cost of Goods Sold – Five Year Projection	9
Table 4: Manpower recruitment plan – five-year projection:.....	10
Table 5: Manpower total cost – five-year projection	10
Table 6: Operational Expenditures – five-year projection	10
Table 7: Capital Expenditures Cost – five-year projection	11
Table 8: Working capital projection (JOD)	12
Table 9: Initial Cost Summary (JOD)	12
Table 10: Projected Income Statement (JOD)	13
Table 11 : Free Cash Flow (FCF) Projection (JOD)	14
Table 12: Sensitivity analysis outcomes	15

Table of Figures

Figure 1: Product Mix by Quantity	9
Figure 2: Product Mix by Revenue.....	9
Figure 3: Gross vs Net Profit Margin	13
Figure 4: Return on Investment.....	14

Executive Summary

EcoWheel aims to improve urban transportation in Jordan by introducing an electric bike-sharing platform for residents, students, professionals, and tourists. Targeting cities like Amman, Irbid, and Zarqa, EcoWheel offers a sustainable alternative to traditional transportation, addressing traffic congestion and environmental concerns. The mobile app-based service allows users to locate and rent electric bikes, promoting eco-friendly urban mobility.

Market analysis indicates potential for EcoWheel, driven by urbanization and a supportive economic environment for green initiatives. With a significant urban population and ongoing government efforts to enhance urban transport infrastructure, EcoWheel is positioned to serve a diverse target market. The competitive landscape is still forming, giving EcoWheel an opportunity to establish a presence in the e-mobility sector.

EcoWheel's business model focuses on efficient urban mobility through electric bike rentals. Key activities include selecting operational zones, maintaining bikes, developing the mobile app, and marketing.

Technical analysis supports the feasibility of EcoWheel, with plans for bike procurement, maintenance, and infrastructure. Financial projections show positive cash flows and increasing profitability over five years. The project's internal rate of return (IRR) is estimated at 37.88%, with a net present value (NPV) of JOD 82,466.

EcoWheel's integration with sectors such as tourism, education, technology, and the environment enhance its value. Key stakeholders include urban residents, government bodies, educational institutions, local businesses, environmental organizations, investors, and technology partners. A risk assessment and mitigation strategy has been developed to address potential challenges.

In summary, EcoWheel presents a cautious yet promising opportunity to improve sustainable urban transportation in Jordan. Investors are advised to consider this project, supported by careful financial projections, strategic planning, and a commitment to sustainability and community engagement.

I. Introduction

Urban areas in Jordan, such as Amman, Irbid, and Zarqa face significant challenges related to transportation, including traffic congestion and limited parking spaces. The reliance on fossil-powered vehicles exacerbates these issues, leading to deteriorating air quality and increased health problems among residents. There is a pressing need for sustainable and efficient transportation solutions that can alleviate these problems to promote cleaner urban environments and provide a technology-driven, low-cost, and convenient solution to commuters.

The introduction of EcoWheel addresses the critical need for eco-friendly urban mobility. By providing an electric bike sharing platform, EcoWheel offers a sustainable alternative to

traditional transportation modes. This service targets a diverse audience, including urban residents, students, professionals, and tourists who seek convenient, affordable, and environmentally conscious transportation options.

EcoWheel leverages technology to provide a flexible transportation service. The mobile app-based platform allows users to locate and rent electric bikes and scooters with ease. Key features include real-time tracking of available bikes allowing users to choose bikes or scooters based on proximity. The platform may offer flexible rental flexible options, catering to different needs. Safety is prioritized with in-app safety instructions and reporting mechanisms. Community engagement is fostered through comments and social sharing. The scalability of EcoWheel is rendered through its digital infrastructure, the ability to expand geographically, and potential to diversify and automate services over time. The service is designed to be implemented within specific zones, which can be interconnected as the model is replicated in different areas.

2. Market Analysis

The global shift towards sustainability and the increasing awareness of environmental issues creates a favorable economic climate for green initiatives such as EcoWheel. Governments and private sectors worldwide are investing heavily in renewable energy and sustainable transportation solutions. Jordan is part of this global trend, with initiatives aimed at reducing carbon emissions and improving urban living conditions. The country's economic policies, most notably the Economic Modernization Vision, support green technologies and sustainable business models, providing a conducive environment for EcoWheel to take advantage of.

The e-mobility industry is experiencing robust growth, driven by advancements in battery technology, increasing urbanization, and the growing demand for eco-friendly transportation options. In Jordan, the market for electric bikes is relatively new and highly regulated and shows significant potential for expansion.

Several key economic indicators underscore the potential success of EcoWheel. These include the urbanization rate, which remained nearly unchanged at around 91.83% in 2022 according to Statista¹, reflecting a growing need for efficient urban transportation solutions.

According to a UN Habitat Report, without interventions, Jordan's transport system will struggle to support the economy and may negatively impact it. To address these challenges, the Government has invested in expanding the infrastructure and services in the past 10 to 15 years. The Amman Vision bus initiative and Bus Rapid Transit (BRT) are two such examples².

However, there is a lack of investment in sustainable modes of transport such as walking, cycling, and smart mobility in Jordan. This is evident in the lack of infrastructure supporting active modes of transportation, such as narrow sidewalks, a lack of pedestrian boulevards, and the absence of cycling routes. However, shared mobility is having a transformative impact

¹<https://www.statista.com/statistics/455851/urbanization-in-jordan/#:~:text=Urbanization%20in%20Jordan%202022&text=In%202022%2C%20the%20share%20of.in%20Jordan%20with%2091.83%20percent.>

² https://unhabitat.org/sites/default/files/2022/02/transportthematic_guide_en.pdf

on many cities by enhancing transportation accessibility, increasing multimodality, reducing vehicle ownership, and vehicle miles traveled (VMT) in some cases. Shared mobility is an umbrella term that encompasses a variety of transportation modes including car sharing, bike-sharing, ridesharing, carpools, and micro-transit. EcoWheel aligns with this direction by offering a sustainable, shared mobility solution that can contribute to alleviating pressure on existing transport systems and contribute to a more integrated and efficient urban mobility network.

The target market for EcoWheel comprises urban residents, students, professionals, and tourists in Jordan's major cities, such as Amman, Irbid, and Zarqa. These individuals seek convenient, sustainable, and cost-effective transportation options. The demographic is diverse, ranging from young adults to middle-aged professionals, all sharing a common interest in improving their daily commute.

Market research indicates a strong potential for the adoption of shared mobility services in Amman, with an estimated adoption rate of 25.4%. According to the study 'Forward-Thinking for Sustainable Mobility Solutions in Amman,' this rate suggests that approximately one in four survey respondents are inclined to switch from their current mode of travel to shared mobility options³. Further supporting this trend, a report by Deloitte projects that global electric bike sales will reach 130 million units between 2020 and 2023, reflecting growing consumer interest in this mode of transportation⁴.

A World Bank study found that the average daily round trip for Jordanians is 2.5 hours, with households spending over JD 2,000 per year on transportation, which represents 17% of their income. For youth, this value is as high as 23%⁵. This significant cost and time burden underscore the urgent need for more efficient and affordable transportation options, such as those offered by EcoWheel.

The competitive landscape for e-bikes and e-scooters in Jordan is still emerging, with a few notable players such as E-Ride, Sky Scooters, Hop-on, and Jordan Scooter. These competitors offer various levels of service, primarily focusing on specific areas or customer segments. EcoWheel differentiates itself through its comprehensive mobile app and strong emphasis on sustainability.

By offering electric bikes for short-term rentals, with the potential to expand to long-term rentals in the future, EcoWheel aims to provide a more efficient and cost-effective alternative for urban commuters. This approach not only addresses the high costs and long commute times associated with existing public transport options but also aligns with the growing demand for sustainable mobility solutions.

³ Albatayneh, O.; Gaweesh, S.M.; Husein Malkawi, D.A. Forward-Thinking for Sustainable Shared Mobility Solutions in Amman. *Sustainability* **2024**, *16*, 732. <https://doi.org/10.3390/su16020732>

⁴ <https://www2.deloitte.com/us/en/insights/industry/technology/smart-micromobility-e-bikes.html>

⁵ <https://documents1.worldbank.org/curated/en/099825106052213281/pdf/P17389502814af03b0a85e0a27bbbaa260.pdf>

3. Business Model

EcoWheel's business model is designed to offer a sustainable and efficient urban mobility solution through the provision of electric bikes. The model leverages a combination of technology, flexible rental, and community engagement to ensure a valuable user experience. Below is a description of the business model.

The operational structure and processes of EcoWheel revolve around four core activities. Firstly, selecting the appropriate zone for implementation, typically one that has high traffic locations (such universities, hospitals, and malls), and positioning the 24 drop-off and charging stations to provide coverage and accessibility. Secondly, bike procurement and maintenance involve sourcing electric-assist bikes and setting up the process for their regular maintenance and safety checks. Thirdly, app development and management focus on developing and maintaining the EcoWheel mobile app to facilitate real-time vehicle tracking, rental management (including payment), and customer support. Lastly, marketing and outreach activities include geo-targeted marketing campaigns to raise awareness about EcoWheel and its benefits, targeting urban residents, students, and tourists, while customer support is provided through various channels including in-app chat, phone, and email.

Key resources for EcoWheel include quality, durable, and efficient electric-assist bikes with the appropriate wattage. These bikes must be well-suited for the hilly roads of Amman, offering the necessary power to navigate inclines. The mobile application is a user-friendly app that enables easy access to rental services, vehicle tracking, payment processing, and customer support. Maintenance facilities consist of a workshop/warehouse and technician(s) for the regular upkeep and repair of the fleet. Lastly, the marketing and sales team promotes the service, engages with the community, and drives adoption.

Personnel at EcoWheel include the Operations Manager, who oversees daily operations, logistics, and fleet management. Customer Service Representatives, who provide support to users, handle inquiries and complaints, and ensure a positive customer experience, maintenance technicians, responsible for the upkeep and repair of electric bikes. A driver who manages the transportation of bikes across various locations, and ebike Valets, who assist with the positioning charging, and general management of the bikes at drop-off and charging stations.

Management and operational procedures for EcoWheel encompass procurement of ebikes, zoning and rental of drop-off & charging locations, maintenance, marketing and sales, and customer service. In terms of production, EcoWheel sources electric-assist bikes from reliable manufacturers and follows regular maintenance schedules to ensure vehicle safety and reliability. Efficient battery management is also a priority, with lithium-ion batteries, which take 3.5 to 6 hours to fully recharge from a depleted state, being regularly changed.

The rental locations and expansion strategy for EcoWheel are integral to the business model, which is built around short-term rentals from strategically placed locations to provide flexible coverage within the operational zone. In the first year, EcoWheel will operate from 8 locations, and in subsequent years, it will grow by 4 locations each year. This expansion plan allows EcoWheel to progressively increase its service coverage, meeting the growing demand and enhancing the availability of e-bikes as the number of bikes in rotation increases.

EcoWheel’s revenue model is calculated based on a starting fare of JOD 0.15 per trip plus JOD 0.1 per minute, with the average trip being 30 minutes. Operating 22 days per month, the daily rental durations reflect the required monthly revenue target per bike which generally decrease as the number of bikes increase per year.

The projected revenue growth over five years highlights the potential for income generation, driven by the gradual increase in the number of bikes available each year and the increasing daily rental duration per bike. This growth trajectory aligns with the rising demand for sustainable urban mobility solutions and positions EcoWheel for long-term success.

Other revenue models can be built along helmet and safety gear rental and long-term rentals such as daily, weekly, and monthly.

Table 1: Monthly and Annual Revenue Calculation

Year	Total Bikes	Daily Rental Duration (hours)	Monthly Revenue per Bike (JOD)	Monthly Revenue (JOD)	Annual Revenue (JOD)	Number of Trips per Year for All Bikes	Target Number of Bike Trips per Day
1	25	4.8	665	16,632	199,584	63,360	9.6
2	38	3.94	546	20,755	294,058	79,200	7.88
3	48	4.20	582	27,950	335,404	106,480	8.4
4	58	4.48	621	36,030	432,355	137,280	8.96
5	68	4.41	611	41,563	498,756	158,400	8.82

The following revenue table shows the calculation per year for the total number of bikes.

Table 2: Revenue projection

Description / Year	1	2	3	4	5
Projected Demand (Quantity) Short-term rentals (Trips)	63,360	79,200	106,480	137,280	158,400
Price / Trip Short-term rentals	3.15	3.15	3.15	3.15	3.15
Total Revenues (JOD)	199,584	249,480	335,412	432,432	498,960

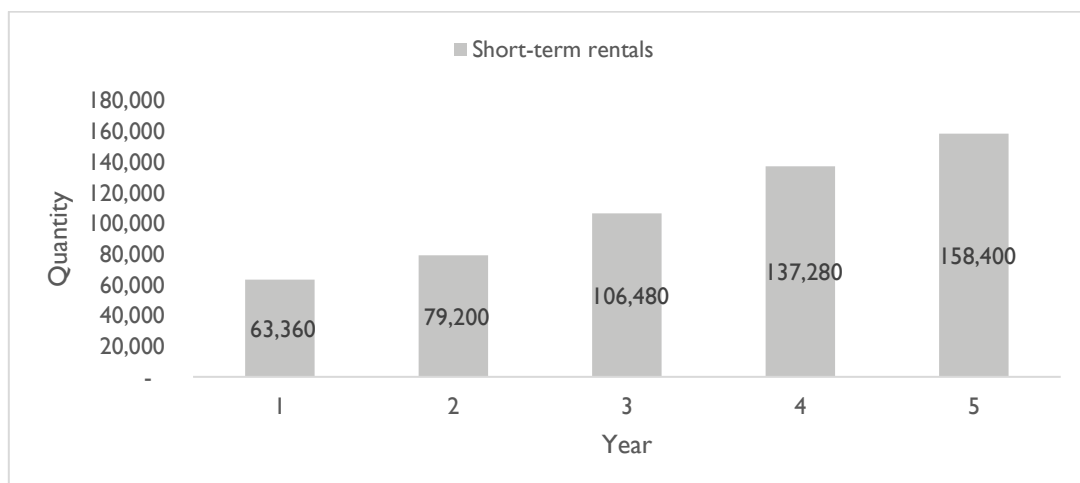


Figure 1: Product Mix by Quantity

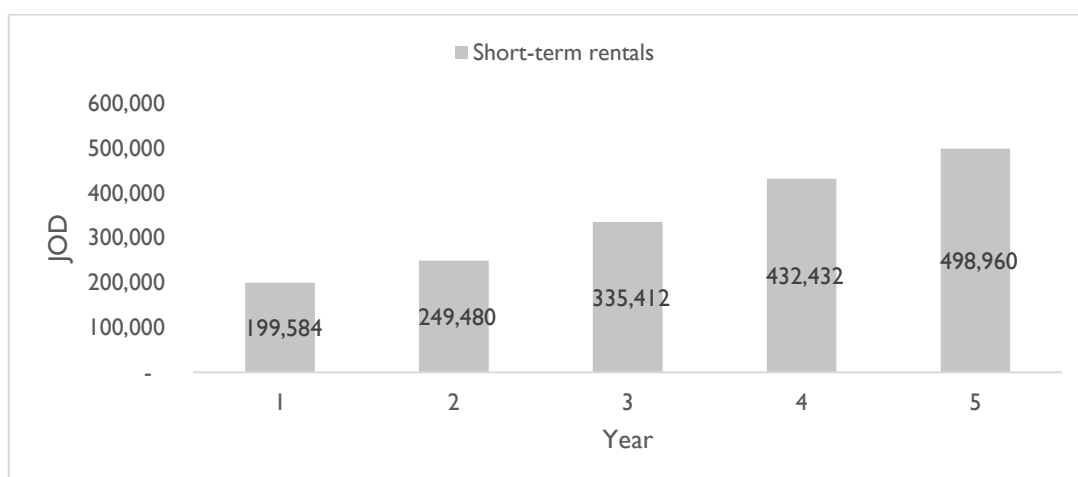


Figure 2: Product Mix by Revenue

4. Technical Analysis

The technical analysis for EcoWheel focuses on the feasibility and practicality of implementing and operating the electric bike sharing service. EcoWheel will use electric bikes that can handle the hilly terrain of Amman. The bikes are equipped with durable lithium-ion batteries and are estimated to cost 800 JDs per bike. The bikes will be regularly maintained to ensure safety and reliability. Charging stations will be strategically located to facilitate easy access to users and efficient battery management.

The cost of goods sold (COGS) account for maintenance and charging of the bikes, which is increasing as the utilization rate of the bikes increases over time, as the table below illustrates:

Table 3: Cost of Goods Sold – Five Year Projection

Description / Year	1	2	3	4	5
Projected Demand (Quantity) Short-term rentals (Minutes)	63,360	79,200	106,480	137,280	158,400
COGS / Minute Short-term rentals	0.384	0.322	0.264	0.215	0.195
Total COGS (JOD)	24,300	25,515	28,067	29,470	30,943

The manpower requirements for EcoWheel are projected to grow steadily over the next five years to support its expanding operations. Initially, the team will comprise 12 staff members, including an Operations Manager, Customer Service Representatives, Maintenance Technicians, Drivers, and Ebike Valets. By the fifth year, the cumulative number of personnel will increase to 32, reflecting the company's growth and the need for additional support to maintain service quality and operational efficiency. The operation is considered labour-intensive mostly because of the need for Ebike valets who are needed in each of the charging & drop off stations to manage the pick-up and drop-off for the bikes by customers. Operational efficiencies and the introduction of technology operated processes may alleviate the manpower requirements in the future.

Table 4: Manpower recruitment plan – five-year projection:

Title / Year	1	2	3	4	5
Operations Manager	1	1	1	1	1
Customer Service Representative	1	2	2	3	3
Maintenance Technician	1	1	1	2	3
Driver	1	1	1	1	1
Ebike valet	8	12	16	20	24
Cumulative Number of HR	12	17	21	27	32

The following table summarizes the annual salaries required for the proposed team structure.

Table 5: Manpower total cost – five-year projection

Title / Year	1	2	3	4	5
Operations Manager	24,000	30,000	36,000	37,800	39,690
Customer Service Representative	8,400	17,640	18,522	29,172	30,631
Maintenance Technician	8,400	8,820	9,261	19,448	30,631
Driver	4,200	4,410	4,631	4,862	5,105
Ebike valet	24,960	39,312	55,037	72,236	91,017
Total HR Salaries	69,960	100,182	123,450	163,518	197,074
Social Security Cost	9,969	14,276	17,592	23,301	28,083
Health Insurance Cost	3,600	5,100	6,300	8,100	9,600
Total HR Cost	83,529	119,558	147,342	194,919	234,757

The operating expenses (OpEx) account for the rental and upkeep of a multi-use location for storage and maintenance of the bikes. The operation, maintenance, and repair cost of the bikes, marketing, and advertising, as well as manpower costs. The rental of the charging & drop-off stations is also included in the operating expenses. The following table provides a summary of these expenses:

Table 6: Operational Expenditures – five-year projection

Description / Year	1	2	3	4	5
Electricity	300	300	300	300	300
Rent (warehouse/office)	2,000	2,000	2,000	2,000	2,000
Water	30	30	30	30	30
Insurance	480	960	1,440	1,920	2,400
Stationary	30	30	30	30	30
Maintenance	4,000	4,500	5,500	6,500	7,500
Telecommunication	100	100	100	100	100
Website Charges	2,000	2,000	2,000	2,000	2,000
Advertising	5,000	5,000	5,000	5,000	5,000
Cleaning Material & Consumables	50	50	50	50	50
Hospitality Exp.	900	900	900	900	900
Legal & Accounting Fees	800	800	800	800	800
Rental of Charging/drop off locations	16,000	24,000	32,000	40,000	48,000
Sub-total OpEx	115,219	160,228	197,492	254,549	303,867
Other Costs	11,522	16,023	19,749	25,455	30,387
Total OpEx	126,741	176,251	217,241	280,004	334,253

This project requires ongoing capital investment to increase the number of bikes and its required charging/stowage infrastructure. The cost for buying an electric truck to support the rotation of the bikes is also included. An additional investment is proposed in Year 3 to install app-operated bike locks that could potentially alleviate manpower costs in the future.

Table 7: Capital Expenditures Cost – five-year projection

Description / Year	0	1	2	3	4	5
Electric Bikes Purchase	20,000	10,000	8,000	8,000	8,000	8,000
Electric Scooters Purchase						
Mobile App Development	10,000	-	-	-	-	-
Charging Infrastructure	4,000	2,000	2,000	2,000	2,000	2,000
vehicle registration cost	2,500	3,750	4,750	5,750	6,750	7,750
Pickup Truck to Transport the bicycles	15,000	10,000				
App-operated bike locks				10,000		
Total CapEx	51,500	25,750	14,750	25,750	16,750	17,750

5. Financial Analysis

5.1 Financial Study Assumptions

The feasibility study is based on the following key assumptions:

Discount Rate: The study employs a conservative discount rate of 14%, reflecting a cautious approach to valuation.

Financing Structure: The project is entirely financed by equity. This conservative approach avoids the financial leverage and thus underestimates project value, given the lower cost of debt compared to equity.

Terminal Value: The project assumes a zero-terminal value at the end of year five, aligning with the study's conservative outlook.

Cash Flow Projection: Cash flows beyond year five are excluded from the analysis, focusing on the initial project phase.

Tax Rate: The assumed tax rate of 20% complies with Jordan's income tax law.

Depreciation Rate: Capital expenditure (CapEx) is depreciated at an annual rate of 20%. Any deviation from this rate may impact projected profitability but not project feasibility, as depreciation is a non-cash expense.

Working Capital Assumptions

Operational liquidity requirements are guided by the following assumptions:

- **Cash Reserves:** The project will maintain cash equivalent to 30 days of projected annual operational expenses, ensuring robust liquidity management.

- **Accounts Receivable (A/R) Collection Period:** The average collection period for receivables is 45 days, reflecting expected credit sales conversion into cash.
- **Accounts Payable (A/P) Payment Period:** The average payment period for payables is 0 days, indicating the timeframe for settling supplier obligations.
- **Inventory Management:** Inventory levels will be maintained to cover an average of two months of sales quantity, ensuring optimal stock levels to meet demand efficiently.

Capital expenditures expected to be incurred in the first year were included as part of the initial costs of the project.

Provisions were made within the initial cost to cover any potential negative net free cash flow that may arise during the first five years of operation, if needed.

5.2 Financial Study:

5.2.1 Projected Working Capital

Table 8: Working capital projection (JOD)

Description / Year	1	2	3	4	5
Cash	10,562	14,688	18,103	23,334	27,854
Accounts Receivable (A/R)	24,948	31,185	41,927	54,054	62,370
Inventory	958	1,647	2,320	3,093	3,627
Net Working Capital	36,468	47,519	62,350	80,481	93,851
Change in Working Capital		11,051	14,831	18,131	13,370

This table shows that the net working capital needed for the project in its first year of operation is JOD 36,468, which has to increase steadily year over year to reach JOD 93,851 in its fifth year. The steady increase in working capital covers the rapid rise in project operations and the increase in projected revenues.

5.2.2 Project Initial Cost

The project's initial cost is projected to be JOD 113,718, comprising JOD 77,250 as CapEx and JOD 36,468 as net working capital.

Table 9: Initial Cost Summary (JOD)

Description / Year	JOD
CapEx	77,250
Net Working Capital	36,468
Total Initial Cost	113,718

5.2.3 Projected Income Statement

The projected income statement indicates that the project will earn JOD 41,314 in its first year of operation. Moreover, the net profit is expected to increase gradually over the study period, reaching JOD 89,997 in its fifth year of operation.

Table 10: Projected Income Statement (JOD)

Description / Year	1	2	3	4	5
Total Revenues	199,584	249,480	335,412	432,432	498,960
COGS	5,750	9,880	13,920	18,560	21,760
Gross Profit	193,834	239,600	321,492	413,872	477,200
OpEx	126,741	176,251	217,241	280,004	334,253
Net Profit Before Tax and Depreciation	67,093	63,349	104,251	133,868	142,947
Depreciation	15,450	18,400	23,550	26,900	30,450
Net Profit Before Tax	51,643	44,949	80,701	106,968	112,497
Tax Expense	10,329	8,990	16,140	21,394	22,499
Net Profit	41,314	35,959	64,561	85,574	89,997

The project is anticipated to generate a 20.7% profit margin in its first year of operation. Moreover, the net profit margin is expected to decrease slightly in subsequent years, reaching 18.0% in the fifth year of operations.

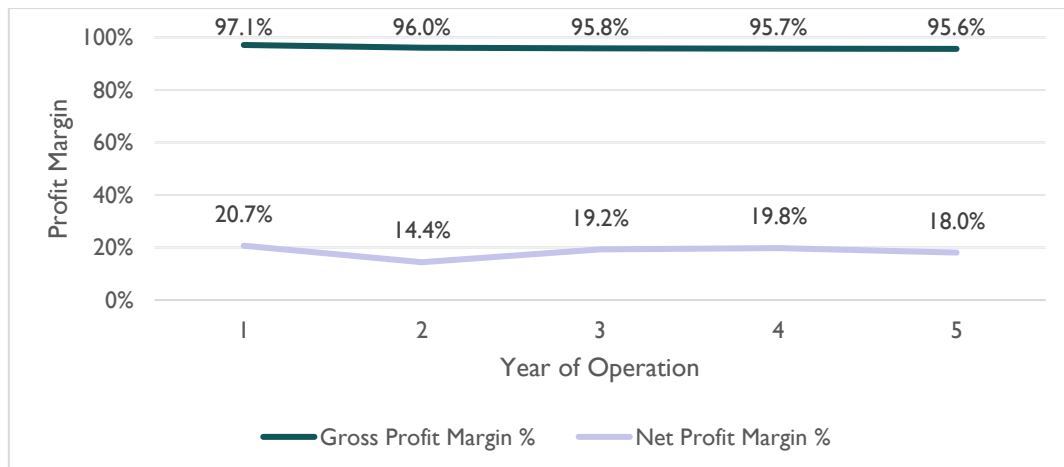


Figure 3: Gross vs Net Profit Margin

On the asset management side, the study shows that the return on investment will increase steadily from 36.3% in the first year of operation to 47.7% in the fifth year.

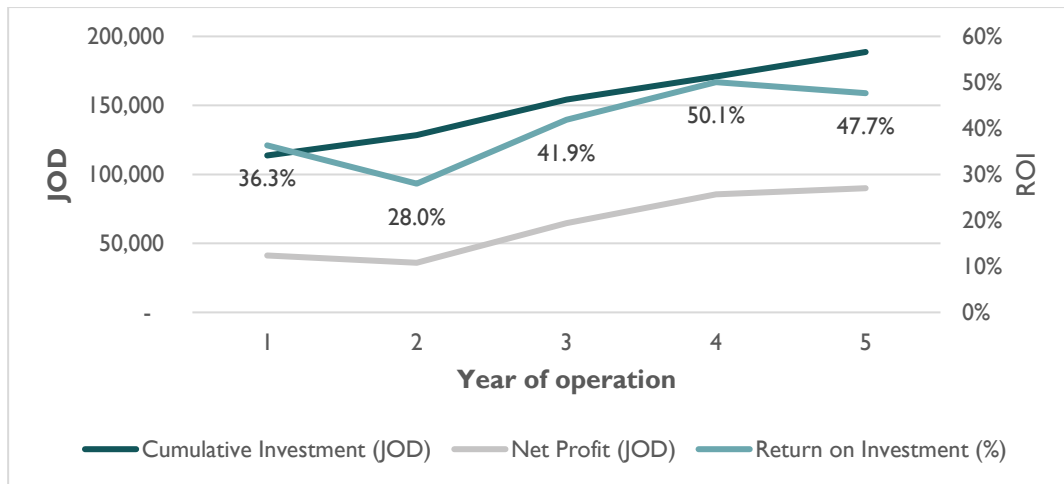


Figure 4: Return on Investment

5.2.4 Projected Free Cash Flow Statement

The table below demonstrates that the project will generate a positive free cash flow in its first year of operation, JOD 56,764. Moreover, in the following years, the free cash flow is expected to increase gradually to reach JOD 89,327 in its fifth year of operation.

Table 11 : Free Cash Flow (FCF) Projection (JOD)

Description / Year	0	1	2	3	4	5
Cash-In Flow						
Net Profit		41,314	35,959	64,561	85,574	89,997
Depreciation		15,450	18,400	23,550	26,900	30,450
Injected Capital	113,718					
Total Cash-In Flow	113,718	56,764	54,359	88,111	112,474	120,447
Cash-Out Flow						
Initial Cost	113,718		14,750	25,750	16,750	17,750
Changes in Working Capital			11,051	14,831	18,131	13,370
Total Cash-Out Flow	113,718	-	25,801	40,581	34,881	31,120
Free Cash Flow	-	56,764	28,558	47,530	77,593	89,327

Based on these results, the project's feasibility indicators demonstrate its viability, with a net present value of JOD 82,466.2 and a profitability index 1.73. Moreover, the project's internal rate of return (IRR) is expected to be 37.88%, indicating feasibility is not sensitive to changes in market conditions.

Feasibility Indicators	
Net Present Value (NPV)	82,466
Profitability Index (PI)	1.73
Internal Rate of Return (IRR)	37.88%

5.3 Sensitivity Analysis

To assess the project's sensitivity to market conditions, a sensitivity analysis was conducted involving six unfavourable scenarios:

- Decrease projected revenues by 5% while keeping other variables constant.
- Decrease projected revenues by 10% while keeping other variables constant.
- Increase operational expenditure by 5% while keeping other variables constant.
- Increase operational expenditure by 10% while keeping other variables constant.
- Increase initial costs by 5% while keeping other variables constant.
- Increase initial costs by 10% while keeping other variables constant.

Table 12: Sensitivity analysis outcomes

Sensitivity Scenario	Net Present Value (NPV)	Profitability Index (PI)	Internal Rate of Return (IRR)
Original Case	82,466	1.73	37.88%
Drop in revenue by 5%	38,122	1.34	25.81%
Drop in revenue by 10%	-6,223	0.95	11.89%
Increase in OpEx by 5%	52,079	1.46	29.70%
Increase in OpEx by 10%	21,692	1.19	20.87%
Increase in initial cost by 5%	76,780	1.64	35.38%
Increase in initial cost by 10%	71,094	1.57	33.08%

The sensitivity analysis shows that, in general, the project is feasible and not sensitive to unfavorable market conditions. Apart from the 10% drop in revenues scenario, the project's economic feasibility is strong and viable under all the above-mentioned scenarios. The drop in revenues has a more dramatic impact on the project viability than the increase in the OpEx or initial cost by the same magnitude. It is recommended that investors check and further study the market to ensure that the projected revenues are achievable within the thresholds of the proposed initial cost and operational expenditures.

6. Integration with Other Sectors

EcoWheel's integration with other sectors enhances its value proposition and broadens its impact. In the tourism sector, EcoWheel can partner with hotels and travel agencies to offer tourists convenient and eco-friendly transportation options, enriching their travel experience. Collaborations with educational institutions can promote sustainable commuting among students and staff, integrating green practices into campus life.

Moreover, integration with the tech sector can lead to advancements in app features and user experience through IoT and data analytics. Collaborations with environmental organizations will further EcoWheel's mission of sustainability, promoting wider adoption of green transportation solutions and contributing to overall urban sustainability efforts.

7. Entrepreneur Persona

The optimal entrepreneur for implementing EcoWheel is a leader with expertise in urban transportation, technology, and sustainability. They should have a deep understanding of urban mobility challenges in Amman, with experience in managing or developing bike-sharing or similar solutions. Proficiency in leveraging technology, such as mobile app development, GPS tracking, and IoT integrations, is essential.

A strong commitment to sustainable transportation and an understanding of its environmental and community impact are crucial. The entrepreneur must excel in managing operations, logistics, and fleet maintenance, with the ability to develop strategic growth plans.

Customer-centricity is key, focusing on excellent service and continuous improvements. Engaging with local communities and stakeholders to promote EcoWheel and build a supportive ecosystem is vital. Strong leadership and team management skills are necessary to inspire and oversee the team, ensuring efficient operations. A passion for sustainability and innovative urban mobility solutions will drive EcoWheel's success in the market.

8. Stakeholders

The stakeholders of EcoWheel encompass a diverse group, each playing a crucial role in the project's success. Key stakeholders include urban residents, students, professionals, and tourists who will be the primary users of the service. Government bodies and regulatory agencies are vital for providing necessary support, subsidies, and regulatory frameworks to promote green transportation.

Partnerships with educational institutions can enhance student and staff mobility, while collaborations with local businesses and tourist attractions can drive adoption and integration into daily activities. Environmental organizations and sustainability advocates are essential stakeholders, supporting EcoWheel's mission to reduce carbon emissions and promote sustainable urban mobility.

Investors and financial institutions are crucial for funding and scaling operations. Additionally, maintenance and technology partners are integral to ensuring the smooth operation and technological advancement of the service. Each stakeholder contributes to the holistic success and marketability of EcoWheel, fostering a supportive ecosystem for sustainable urban transportation.

9. Risk Assessment and Mitigation

The following table highlights the key risks associated with EcoWheel's operations, their potential impact, the likelihood of occurrence, and the techniques to mitigate these risks.

Risk	Impact	Likelihood	Risk Mitigation Technique
Regulatory Changes	High	Medium	Engage with policymakers, adapt to regulations
Battery Degradation	Medium	High	Regular maintenance, invest in quality batteries
Vandalism and Theft	High	High	Implement GPS tracking, secure locks, insurance
Market Competition	Medium	Medium	Differentiation through quality and service
Technology Failures	High	Low	Regular system updates, robust IT support
Customer Adoption	Medium	Medium	Marketing campaigns, user education programs
Infrastructure Challenges	High	Medium	Collaborate with local authorities, plan logistics
Economic Downturn	High	Low	Diversify revenue streams, financial planning
Environmental Factors	Medium	Medium	Weather-resistant equipment, contingency plans
Operational Inefficiencies	Medium	Medium	Continuous process improvement, staff training

Based on the feasibility study and risk assessment, several recommendations are crucial to ensure the successful implementation and sustainability of EcoWheel.

Regulatory Compliance: Engage proactively with local government and regulatory bodies to stay ahead of potential regulatory changes. By participating in policy discussions and aligning with government sustainability goals, EcoWheel can mitigate risks related to regulatory compliance.

Battery Management: The high likelihood and medium impact of battery degradation necessitate regular maintenance schedules and investing in high-quality batteries. Implementing a robust battery management system that includes regular performance checks and timely replacements will extend battery life and ensure reliable service.

Security Measures: To combat vandalism and theft, which are high-likelihood, high-impact risks, implement comprehensive security measures. These include GPS tracking for all bikes, secure locking systems, and comprehensive insurance coverage. Additionally, engaging with local law enforcement and community watch programs can enhance security.

Market Differentiation: With medium likelihood and impact, market competition can be mitigated by differentiating EcoWheel through superior service quality, customer experience,

and sustainability initiatives. Regularly updating the mobile app, providing excellent customer support, and maintaining high operational standards will help EcoWheel stand out in a competitive market.

Technology Reliability: To address the low-likelihood but high-impact risk of technology failures, maintain a dedicated IT support team to conduct regular system updates and troubleshoot issues promptly. Investing in reliable technology and continuously improving the app's features will minimize disruptions.

Customer Engagement: Enhancing customer adoption involves comprehensive marketing campaigns and user education programs. Highlighting the benefits of using EcoWheel, such as cost savings and environmental impact, will attract and retain customers. Providing user-friendly onboarding processes and ongoing support will further enhance customer satisfaction.

Infrastructure Collaboration: Overcoming infrastructure challenges involves working closely with local authorities to plan and develop necessary infrastructure. Strategically locating charging and drop-off stations in high-traffic areas will maximize accessibility and convenience for users.

Financial Stability: Preparing for economic downturns requires diversifying revenue streams, such as offering long-term rentals and ancillary services like safety gear rental. Prudent financial planning and maintaining an emergency fund will provide a buffer against economic fluctuations. Moreover, the sensitivity analysis indicated that a 10% drop in revenues will lead to a negative Net Present Value (NPV), indicating the need to rigorously manage revenues to avoid negative implications on the business.

Environmental Preparedness: Addressing environmental factors, such as adverse weather conditions, by investing in weather-resistant equipment and developing contingency plans will ensure continuous operations.

Operational Efficiency: Continuous improvement of operational processes through staff training and adopting best practices will mitigate risks associated with operational inefficiencies. Regularly reviewing and optimizing logistics, maintenance, and customer service processes will enhance overall efficiency and effectiveness.

10. Conclusion

In conclusion, the project demonstrates promising feasibility indicators under very restrictive assumptions. Nonetheless, investors are advised to conduct additional analysis on projected demand, initial costs, and operational expenses to mitigate potential risks associated with adverse market conditions that could jeopardize its viability.

Disclaimer

The Ministry of Digital Economy and Entrepreneurship (MoDEE) and Istadama Consulting have prepared this report using information supplied by its advisors as well as information available in the public domain.

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Founders and investors considering this project are advised to conduct further analysis on projected adoption rates, development costs, and ongoing operational expenses. This additional scrutiny will help mitigate potential risks related to technology challenges, changes in regulations, market penetration, and competitive pressures.

The report does not constitute any form of commitment or recommendation on the part of MoDEE or Istadama Consulting.