



Electric Vehicle Charging App

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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Executive Summary

This high-level feasibility study provides an analysis of the potential for launching an electric vehicle charging app, designed to enhance the EV (electric vehicle) charging experience in Jordan. The mobile application offers real-time data on nearby charging stations, including location availability, and booking options. It features AI-driven route optimization and smart route planning, analyzing traffic patterns and historical data to recommend the most energy efficient routes. This high-level feasibility study aims to evaluate the market potential, technical feasibility, financial viability, and impact of the venture.

The business model leverages two revenue streams, including subscription fees from charging network providers and app users. The financial projections show a steady increase in revenue from JOD 33,800 in the first year to JOD 174,000 by the fifth year, ensuring financial sustainability.

From a technical standpoint, the startup is feasible with significant investments in software development and operational expenses, supported by a dedicated team. The comprehensive suite of services offered addresses the needs of both B2B and B2C customers, enhancing the EV charging experience and promoting sustainable transportation.

A key component of the success strategy is the implementation of effective marketing efforts. Ensuring widespread awareness through multiple channels is crucial to attracting a broader segment of users.

In conclusion, the feasibility study demonstrates that the proposal has the potential for success. The business model, coupled with technological capabilities and market integration, positions the startup to play a role in the EV charging ecosystem, supporting adoption, and contributing to sustainable transportation.

I. Introduction

The EV charging mobile application being studied is designed to improve electric vehicle (EV) experience. It provides real-time data on nearby charging stations, including essential details such as location, availability, and booking options. The application allows users to secure a spot at their chosen station, receive notifications about their charging status, and access comprehensive summaries of each session detailing energy usage, costs, and emissions.

The app integrates AI-driven route optimization, taking into consideration charging station locations, availability, and charging times, to ensure efficient and convenient journeys for EV drivers. Additionally, the app features smart route planning that accounts for charging needs and analyses traffic patterns and historical traffic data to recommend the most energy-efficient routes. This helps users avoid congested roads, reducing electricity consumption and travel time. Users can receive weekly and daily reports on their driving patterns, energy usage, and savings, further emphasizing the app's commitment to energy conservation and a hassle-free charging experience.

The proposed EV charging app sits at the intersection of technology and sustainability, addressing the need for improved EV infrastructure. By enhancing the user experience and optimizing energy use, the app contributes to broader environmental goals, such as reducing greenhouse gas emissions and minimizing reliance on fossil fuels.

This high-level study aims to provide entrepreneurs with an understanding of the market dynamics, technological considerations, and financial aspects associated with launching the startup, thereby facilitating informed decision-making and strategic planning.

2. Market Analysis

Jordan is at a crucial juncture in its transition towards electric mobility, facing significant challenges and opportunities. The country's energy consumption in 2021 was 6,221 kilotons of oil equivalent (ktoe), with the transportation sector being the largest consumer, accounting for 43% of total energy use¹. This high consumption highlights the potential impact of transitioning to more efficient and environmentally friendly transportation options.

The transportation sector not only contributed significantly to energy consumption but is also a major source of greenhouse gas emissions. Addressing these emissions is critical for meeting Jordan's environmental goals as outlined in Jordan Vision 2025 which aims to promote sustainability and reduce the country's carbon footprint.

The adoption of electric vehicles (EVs) in Jordan has seen a marked increase. Before 2020, the number of EVs stood at 50,000, but since then, an additional 100,000 electric cars have entered Jordan, bringing the total to nearly 120,000. With the total number of cars in Jordan estimated at around two million, EVs now comprise between 5% and 7% of the total fleet. As of early 2024, 18.5% of vehicles in Jordan are electric and hybrid², reflecting a growing awareness and acceptance of EVs as a viable alternative to traditional fossil fuel-powered vehicles. However, the existing EV charging infrastructure remains insufficient, posing a barrier to further growth.

As of October 2023, there are around 60 operating EV charging stations integrated within fuel stations in Jordan, in addition to 14 others charging stations at malls, hospitals, and other locations³. This represents an increase from June 2023, where there were approximately 55 charging stations across the country⁴. The economic viability of EV infrastructure investments is currently hampered by the tariff system, which limits the profitability for public charging stations. However, the potential for growth remains high, driven by the increasing adoption of EVs and the government's commitment to promoting sustainable transportation through initiatives such as the Jordan Long Term National Transportation Strategy (2015 - 2030).

Government incentives, such as tax benefits and subsidies for EV purchases and infrastructure development, play a critical role in supporting this transition. Globally, Jordan is aligning with trends seen in countries with high EV adoption rates.

¹ Jordan Energy Balance 2021, <https://www.memr.gov.jo/AR/List/>

² <https://www.jordannews.jo/Section-109/News/Electric-cars-make-up-over-18-of-Jordan-s-roads-increase-in-demand-33409>

³ <https://jordantimes.com/news/local/jordan-inaugurates-first-fully-electric-vehicle-charging-station>

⁴ <https://www.homes-jordan.com/en/blogs/detail/electric-vehicle-charging-stations-in-jordan>

The economic benefits of transitioning to EVs include reduced reliance on imported fuels and potential job creation in new sectors related to EV infrastructure and maintenance. However, challenges such as fluctuating energy prices, technological advancements, and potential economic downturns present risks that need to be addressed ^{5 6}.

The startup caters to both B2B (Business-to-Business) and B2C (Business-to-Consumer) markets, providing tailored solutions to meet the needs of each segment.

It offers charging network providers enhanced visibility of their charging stations, providing data insights that help optimize operations and improve service delivery. This includes real-time data on station usage, peak times, and maintenance needs. By integrating with the app, charging network providers can offer an improved user experience to their customers. Features like real-time availability, booking options, and status notifications enhance the convenience and reliability of charging services. Additionally, charging network providers can leverage the app to promote their services and special offers. The app serves as a platform to attract more users by highlighting nearby stations, special discounts, and loyalty programs.

The EV charging app provides EV owners with convenient access to charging stations. The app's features, such as real-time updates on station availability and booking options, ensure a hassle-free charging experience. Users receive real-time notifications about their charging status, energy usage, and costs, helping manage their expenses and optimize their charging routines for cost savings. It fosters community engagement by connecting users with local EV groups and forums and raises environmental awareness by providing insights into the environmental impact of their charging habits and promoting sustainable practices.

The EV market in Jordan is expected to reach a revenue of USD 64.3 million in 2024. With an anticipated annual growth rate of 8.08% (CAGR 2024-2028), the market volume is projected to reach USD 87.7 million by 2028⁷. This significant growth, brought about by reduced import taxes and the introduction of more affordable models, underscores the expanding market potential and the increasing acceptance of electric mobility solutions among Jordanian consumers.

Jordan has reduced the import duties on EVs which is set at 10% (down from 25% previously) as opposed to that for hybrid cars which is 55% and petrol-fueled cars which is 86%. However, most of the new vehicles in Jordan are imported showing that consumers favour less costly models⁸.

EV charging in Jordan is characterized by long waiting times which are primarily due to the limited number of charging stations relative to the growing number of EVs. EV owners often experience waiting times of around 1.5 hours at charging stations⁹.

One of the competitors in Jordan is an app that provides a list of charging stations in Jordan. This app has an established user base familiar with its functionality. However, it lists only 46

⁵<https://www.fitchsolutions.com/bmi/autos/jordan-ev-profile-segment-grow-reduced-import-taxes-and-arrival-new-affordable-models-08-06-2023>

⁶ <https://library.fes.de/pdf-files/bueros/amman/15635.pdf>

⁷<https://www.statista.com/outlook/mmo/electricvehicles/jordan#:~:text=In%202024%2C%20the%20projected%20revenue,US%2487.7m%20by%202028.>

⁸ https://www.fitchsolutions.com/bmi/autos/jordan-ev-profile-segment-grow-reduced-import-taxes-and-arrival-new-affordable-models-08-06-2023?fSWWebArticleValidation=true&mkt_tok=NzMyLUNLSC03NjcAAAGUSIv_no6rI-OulugtJLOEq7XP7IUFzE95qh8ZMNFYBecjLyN7Gwvt-thjnHEwDogLTWm4KWpXcyBXMilujkPyL6obgUWv2vBDVWJ8bgqDsS_fPaRQ

⁹ <https://library.fes.de/pdf-files/bueros/amman/15635.pdf>

charging stations, which is less than the actual number currently operating in the market, indicating outdated information. Furthermore, it lacks additional features such as real-time data, booking options, and user notifications, limiting its utility for EV owners seeking a seamless charging experience.

Another app offers roadside assistance for EV owners, including services such as mobile charging. This app's strength lies in its provision of specialized services, which can be a critical aid for EV owners in distress. However, it is not a comprehensive solution for everyday charging needs and lacks the features that the proposed app provides. Consequently, it likely has a niche user base focused on emergency services rather than regular charging infrastructure.

The third app is the governmental mobile app launched by the Energy and Mineral Resources Commission (EMRC) in April 2024. This app, being an official and authoritative source, provides a directory of all EV charging stations in Jordan and is likely to be trusted by users to its governmental backing.

Several international apps offer services to locate EV charging stations but lack the comprehensive and user-centric experience. For example, Electromaps provides a directory of charging points and user feedback but lacks advanced features like route optimization and real-time availability updates. Chargemap offers a broad map of over 750,000 charge points across Europe and includes community features, route planning, and real-time data on charging station status. It also integrates with Apple CarPlay and Android Auto for in-car navigation, but its primary focus remains on mapping and basic usage information.

The proposed EV charging app can integrate complementary services like those offered by the roadside assistance app, providing a holistic solution for EV owners. By incorporating data from the governmental app, it ensures that users have the most accurate information available.

The app distinguishes itself from current and potential competitors through several key features and strategic advantages. Unlike directory applications, it offers real-time data on charging station availability and allows users to book charging spots in advance. The app also includes advanced features such as AI-driven route optimization, real-time notifications, detailed session summaries, and cost tracking, which are absent in the current competitors. This positions the proposed EV charging app as a more comprehensive and user-friendly solution.

3. Business Model

The business model combines product (app) sales and partnerships. This model is designed to leverage the company's technology features to offer unique value propositions across the B2B and B2C market segments.

Revenue is generated through two channels. First, the app offers subscription-based services to both B2B and B2C customers. For B2B clients, such as charging network providers, subscriptions include access to data insights such as demand forecasting, push notifications to customers, user management tools, and promotional opportunities.

B2C customers, EV owners, can subscribe to premium features like AI-driven route optimization, detailed energy usage reports, and priority booking options. Additionally, a small transaction fee is charged for each booking made through the app, ensuring a steady revenue stream as the user base grows.

Revenue can be further expanded by offering advertising and promotional services in the sense that network providers and related businesses can advertise their services and special offers within the app. This includes targeted promotions based on user behaviour and location data.

To ensure sustained growth and user acquisition, a multi-faceted marketing strategy is needed. This strategy focuses on raising awareness through multiple channels, attracting a wide segment of users, and maintaining engagement through regular updates and community-building initiatives.

The initial launch of can be started with a pilot program in Amman which has the highest concentration of EV owners and charging stations. Following successful implementation in Amman, the business can expand to other major cities like Irbid and Zarqa. Eventually, the goal is to cover all of Jordan, providing comprehensive EV charging solutions nationwide. By covering all of Jordan, the EV charging app can support EV travellers from one city to another, reducing range anxiety and ensuring a better commute.

The cost structure includes significant investments in research and development (R&D) to maintain technological leadership and enhance the app's features. This involves developing and improving AI algorithms, integrating data sources, and developing friendly and intuitive user interfaces. Marketing and sales expenditures are essential to drive user acquisition and market penetration, including digital marketing, partnerships with EV dealerships, and presence at industry events. Day-to-day operational costs cover salaries for staff, server and cloud services, customer support, and administrative expenses requiring efficient management to ensure profitability. Additionally, costs associated with maintaining and updating the app's infrastructure, including server costs, cybersecurity measures, and regular maintenance, are crucial to ensure the app remains functional and secure.

For B2B customers, the app offers enhanced visibility and data insights, improving operational efficiency and customer satisfaction. By providing real-time data, booking options, and promotional opportunities, the app helps charging network providers optimize their services and attract more users. For B2C customers, the app provides convenient and efficient charging solutions, real-time updates, and detailed cost and energy usage reports.

The success of the startup is driven by a team of key personnel. The CEO/Founder provides overall strategic direction and leadership and drives the technician aspect of the company. The Customer Relationship Manager handles the relationship with the charging network providers and other stakeholders. The IT manager and IT technician oversee the technical development and maintenance of the app as well as its day-to-day technical operations.

The startup provides a comprehensive suite of services designed to enhance the EV charging experience for both B2B and B2C customers. These services are available as part of the subscription model. Smart Route Planning utilizes AI-driven route optimization to ensure efficient and convenient journeys for EV owners by considering charging station locations, availability, and traffic conditions. Charging Booking & Notifications allow users minimizing

users to secure charging spots in advance and receive real-time updates on their charging status, minimizing waiting times and improving convenience. Dynamic Pricing Alerts provide real-time notifications about pricing and discounts at nearby charging stations. The app’s Community Features foster a community of EV owners who can share reviews, tips, and recommendations about charging stations and EV maintenance. Real-time Charging Stations Data offers access to up-to-date information on the location and availability of nearby charging stations, helping users plan their trips more effectively. Detailed Charging Summaries provide comprehensive session reports including energy usage, costs, and emissions, offering valuable insights into users’ charging habits and environmental impact. Navigation of EVs ensures that owners are guided along the best routes for their vehicles.

Analysis of Revenue Streams:

During the first five years of operation, revenue is poised to be generated from two streams: subscriptions from charging network providers and subscriptions from app users. The projected quantities and revenues for each stream illustrate a steady growth pattern, reflecting the increasing adoption of EVs and the expansion of the charging infrastructure in Jordan.

The number of subscribed charging stations is projected to increase from 10 in the first year to 60 by the fifth year. This growth is driven by the expanding EV market and the increasing need for advanced data analytics and promotional tools that are offered. Assuming that the subscription price of JOD 500 per station remains constant, the revenue from this stream is projected at JOD 5,000 in the first year increasing to JOD 30,000 by the fifth year. Subscriptions from app users constitute the most significant portion of the revenue, with the number of users projected to rise from 1,200 in the first year to 6,000 by the fifth year. The annual subscription is set at JOD 24 per user per year, ensuring a recurring revenue stream. This results in an increase in revenue from JOD 28,800 in the first year to JOD 144,000 by the fifth year. In terms of combined revenues, the total revenue is projected to increase from JOD 33,800 in the first year to JOD 174,000 by the fifth year. The table below details the projected demand, unit prices, and resulting revenues for each stream.

Table 1: Revenue projection

Description / Year	1	2	3	4	5
Projected Demand (Quantity) Charging Station	10	25	40	55	60
Price / Unit Charging Station (JOD)	500	500	500	500	500
Sub-total Charging Station (JOD)	5,000	12,500	20,000	27,500	30,000
Projected Demand (Quantity) App Users	1,200	2,600	3,600	4,800	6,000
Price / Unit App Users (JOD)	24	24	24	24	24
Sub-total App Users (JOD)	28,800	62,400	86,400	115,200	144,000
Total Revenues (JOD)	33,800	74,900	106,400	142,700	174,000

The product mix sees the two revenue streams contributing differently to the total quantity and revenue over the five-year period. In the first year, charging station partnerships represent less than 1% of the quantity sold and account for about 15% of the total revenue. On the other hand, the 1,200 app users represent more than 99% of the total volume sold and account for 85% of the total revenue. In Year 5, as the network of charging stations grows, they will evolve to contribute 1% of the total sales units, and about 17% of the total revenue,

the app users will continue to dominate the unit sold and the total revenues at about 83%. Overall, the revenue mix shows strong reliance on the high-volume, lower-priced app user subscriptions, while charging station subscriptions, though much fewer in number, contribute significantly due to their high price per unit.

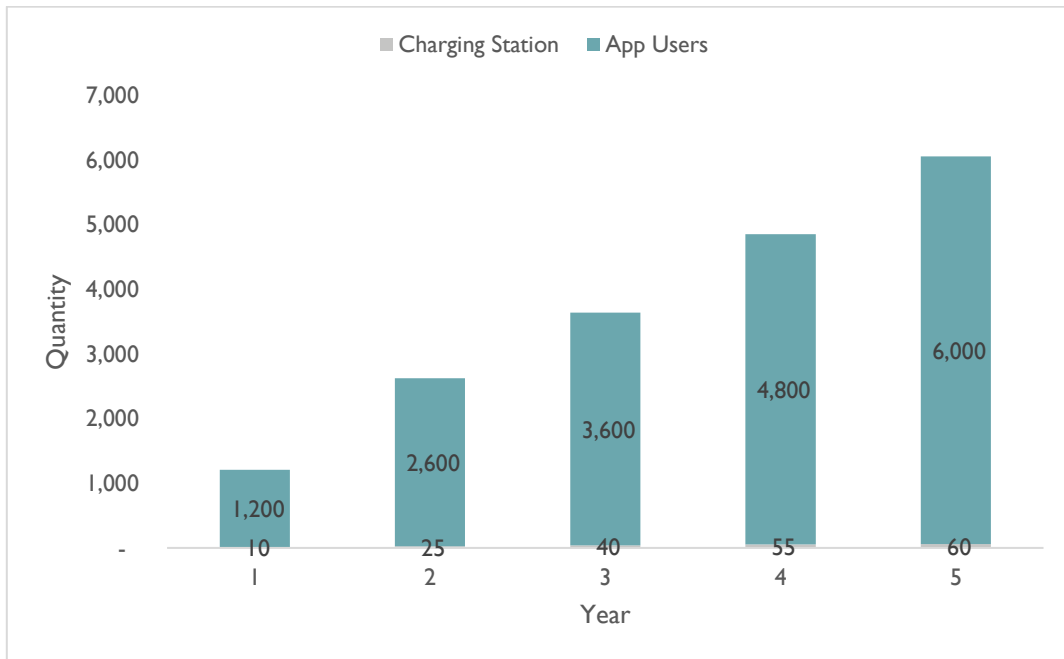


Figure 1: Product Mix by Quantity

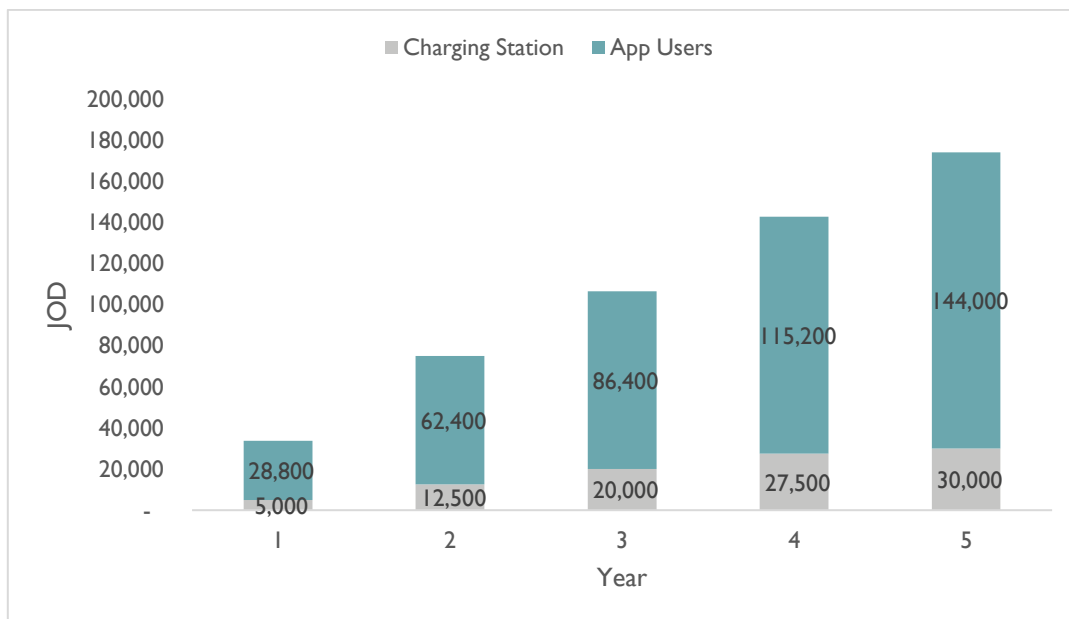


Figure 2: Product Mix by Revenue

4. Technical Analysis

In terms of Cost of Goods Sold (COGS), there are no costs associated with each sales transaction. All costs are categorized either as capital expenditures (CapEx) or operating expenses (OpEx).

The headcount for the initial five years is structured to ensure that the startup has the necessary human resources to meet its strategic objectives. The CEO/Founder and the IT Manager positions are maintained at 1 each throughout the first five years. The Customer Relationship Manager starts with 1 position and increases to 2 by the fourth year to support market expansion. Technical Officers are not required in the first two years with 1 position being added in the third year. The cumulative number of human resources begins with 2 employees in the first year and reaches 5 by the fourth year, remaining constant thereafter.

Table 2: Manpower recruitment plan – five-year projection:

Title / Year	1	2	3	4	5
CEO/Founder	1	1	1	1	1
Customer Relationship Manager	0	1	1	2	2
IT Manager	1	1	1	1	1
Technical Officer(s)	0	0	1	1	1
Cumulative Number of HR	2	3	4	5	5

The manpower requirements are critical to operational success, with key roles necessary to drive technological development, market expansion, and customer support. The assumptions underpinning these requirements include an annual number of salaries set at 12, a company contribution to social security at 14.25% and health insurance costs of JOD 300 per person. There is no additional cost for family health insurance coverage, as the average employee's family size is considered zero.

The cumulative annual salaries for all human resources start at JOD 30,762 in the first year and continue to grow annually to reach JOD 71, 616 in Year 5 as shown in the table below.

Table 3: Manpower total cost – five-year projection

Title / Year	1	2	3	4	5
CEO/Founder	14,400	15,120	15,876	16,670	17,503
Customer Relationship Manager	-	10,080	10,584	22,224	23,328
IT Manager	12,000	12,600	13,230	13,892	14,586
Technical Officer(s)	-	-	5,400	5,670	5,954
Total HR Salaries	26,400	37,800	45,090	58,456	61,371
Social Security Cost	3,762	5,387	6,425	8,330	8,745
Health Insurance Cost	600	1,200	1,200	1,500	1,500
Total HR Cost (JOD)	30,762	44,387	52,715	68,285	71,616

The operating expenses encompass a variety of essential costs required to maintain smooth business operations. Annually, rent is estimated to amount to JOD 2,000. Electricity and water costs are relatively modest at JOD 300 and JOD 30 per year, respectively. Maintenance and telecommunication expenses each stand at JOD 100, covering regular upkeep and communication needs. Web hosting and advertising are significant expenses, both set at JOD 2,000 annually, crucial for maintaining the app’s online presence and promoting its services.

The operational costs, which include manpower and a contingency allowance to cover transportation costs calculated as a percentage of operational expenses, total JOD 42,979 in the first year and are projected to rise to JOD 87,979 by the fifth year.

Table 4: Operational Expenditures – five-year projection

Description / Year	1	2	3	4	5
Rent	2,000	2,000	2,000	2,000	2,000
Electricity	300	300	300	300	300
Water	30	30	30	30	30
Stationary	30	30	30	30	30
Maintenance	100	100	100	100	100
Telecommunication	100	100	100	100	100
Web hosting	2,000	2,000	2,000	2,000	2,000
Advertising	2,000	2,000	2,000	2,000	2,000
Cleaning Material & Consumables	50	50	50	50	50
Hospitality Exp.	900	900	900	900	900
Legal & Accounting Fees	800	800	800	800	800
Sub-total OpEx	39,072	52,697	61,025	76,595	79,926
Other Costs	3,907	5,270	6,103	7,660	7,993
Total OpEx	42,979	57,966	67,128	84,255	87,919

The capital expenditures (CapEx) primarily focus on software development, which is crucial for building and enhancing the app’s features and infrastructure. In the initial setup phase (Year 0), an investment of JOD 5,000 is allocated to kick-start the software development process. This is followed by a significant expenditure of JOD 20,000 in the first year to further develop and expand the app’s capabilities, ensuring it meets the needs of both B2B and B2C users.

Table 5: Capital Expenditures Cost – five-year projection

Description / Year	0	1	2	3	4	5
Software Development	5,000	20,000				
Total CapEx	5,000	20,000	-	-	-	-

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.

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

This table shows that the net working capital needed for the project in its first year of operation is JOD 7,807, which has to increase steadily year over year to reach JOD 29,077 in its fifth year. The steady increase in working capital covers the rapid rise in project operations and the increase in projected revenues.

Table 6: Working capital projection (JOD)

Description / Year	1	2	3	4	5
Cash	3,582	4,831	5,594	7,021	7,327
Accounts Receivable (A/R)	4,225	9,363	13,300	17,838	21,750
Accounts Payable (A/P)	-	-	-	-	-
Net Working Capital	7,807	14,193	18,894	24,859	29,077
Change in Working Capital		6,386	4,701	5,965	4,218

5.2.2 Project Initial Cost

The project's initial cost is projected to be JOD 41,986, comprising JOD 25,000 as CapEx, JOD 9,179 as provisions for the first-year negative free cash flow and JOD 7,807 as net working capital.

Table 7: Initial Cost Summary (JOD)

Description / Year	JOD
CapEx	25,000
Provisions for first year(s) negative free cash flows	9,179
Net Working Capital	7,807
Total Initial Cost	41,986

5.2.3 Projected Income Statement

The projected income statement indicates that the project will lose JOD 14,179 in its first year of operation. However, the net profit is expected to be positive and increase gradually over the study period, reaching JOD 64,865 in its fifth year of operation.

Table 8: Projected Income Statement (JOD)

Description / Year	1	2	3	4	5
Total Revenues	33,800	74,900	106,400	142,700	174,000
COGS	-	-	-	-	-
Gross Profit	33,800	74,900	106,400	142,700	174,000
OpEx	42,979	57,966	67,128	84,255	87,919
Net Profit Before Tax and Depreciation	-9,179	16,934	39,272	58,445	86,081
Depreciation	5,000	5,000	5,000	5,000	5,000
Net Profit Before Tax	-14,179	11,934	34,272	53,445	81,081
Tax Expense			6,405	10,689	16,216
Net Profit	-14,179	11,934	27,867	42,756	64,865

The project is anticipated to experience a -42.0% profit margin in its first year of operation. However, the net profit margin is expected to gradually increase in subsequent years, reaching 37.3% in the fifth year of operations.

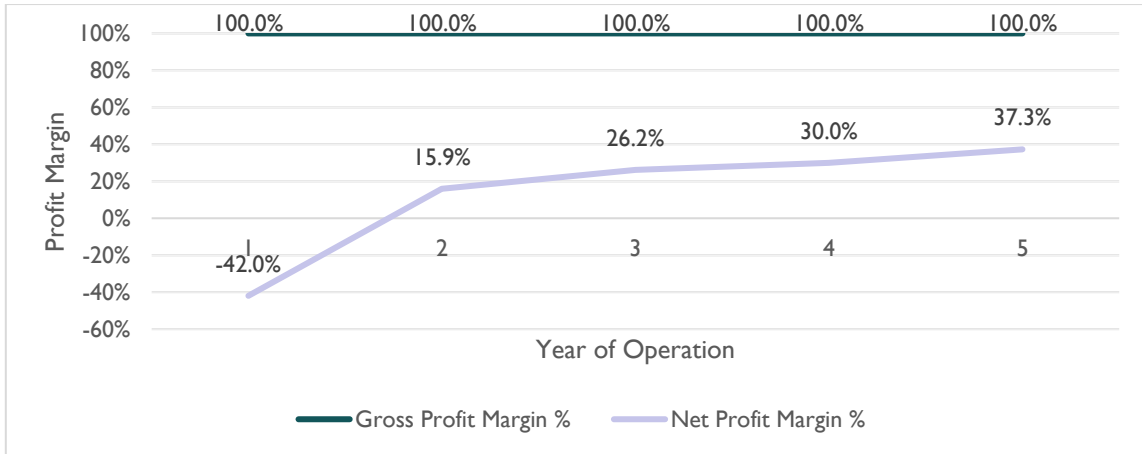


Figure 3: Gross vs Net Profit Margin

On the asset management side, the study shows that the return on investment will increase steadily from -43.2% in the first year of operation to 197.7% in the fifth year.

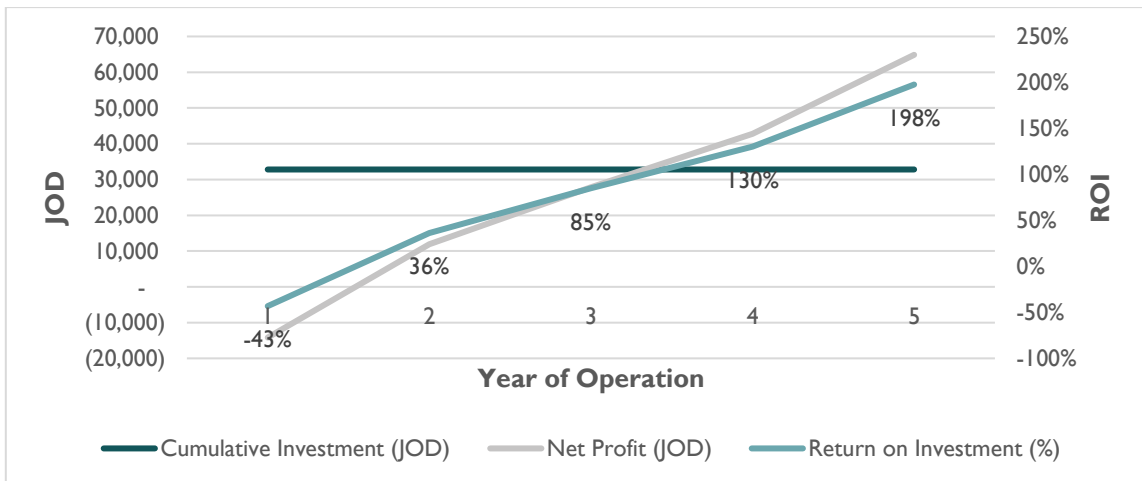


Figure 4: Return on Investment

5.2.4 Projected Free Cash Flow Statement

The table below demonstrates that the project will generate a negative free cash flow in its first year of operation, JOD 9,179. Moreover, in the following years, it is expected to generate positive free cash flows that increase gradually to reach JOD 65,647 in its fifth year of operation.

Table 9 : Free Cash Flow (FCF) Projection (JOD)

Description / Year	0	1	2	3	4	5
Cash-In Flow						
Net Profit		-14,179	11,934	27,867	42,756	64,865
Depreciation		5,000	5,000	5,000	5,000	5,000
Injected Capital	41,986					
Total Cash-In Flow	41,986	-9,179	16,934	32,867	47,756	69,865
Cash-Out Flow						
Initial Cost	32,807		-	-	-	-
Changes in Working Capital			6,386	4,701	5,965	4,218
Total Cash-Out Flow	32,807	-	6,386	4,701	5,965	4,218
Free Cash Flow	9,179	-9,179	10,547	28,166	41,792	65,647

Based on these results, the project's feasibility indicators demonstrate its viability, with a net present value of JOD 35,928.5 and a profitability index of 1.86. Moreover, the project's internal rate of return (IRR) is expected to be 31.64%, indicating feasibility is not sensitive to changes in market conditions.

Feasibility Indicators	
Net Present Value (NPV)	35,928
Profitability Index (PI)	1.86
Internal Rate of Return (IRR)	31.64%

5.3 Sensitivity Analysis

To assess the project's sensitivity to market conditions, a sensitivity analysis was conducted involving six unfavorable 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 10: Sensitivity analysis outcomes

Sensitivity Scenario	Net Present Value (NPV)	Profitability Index (PI)	Internal Rate of Return (IRR)
Original Case	35,928	1.86	31.64%
Drop in revenue by 5%	20,741	1.47	24.23%
Drop in revenue by 10%	-5,316	0.91	11.66%
Increase in OpEx by 5%	24,408	1.55	25.67%
Increase in OpEx by 10%	12,888	1.28	20.02%
Increase in initial cost by 5%	24,650	1.46	24.56%
Increase in initial cost by 10%	20,691	1.36	22.50%

The sensitivity analysis shows that, in general, the project is feasible and not sensitive to unfavourable market conditions. Apart from the 10% drop in the revenue's 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

Integration within the broader economy offers substantial benefits, enhancing its impact and marketability. Collaborating with renewable energy providers allows for offering green charging options, promoting sustainable energy use and balancing grid demand through smart charging solutions. Partnerships with urban planners and transportation authority's optimize charging station placements, improving accessibility and encouraging EV adoption. By working with environmental organizations, the startup can highlight its contributions to reducing emissions, supporting environmental sustainability efforts. Economically, the app stimulates local economies by creating jobs in the green energy sector and attracting investments.

7. Entrepreneur Persona

The ideal team to lead the startup should consist of individuals with a combination of expertise in the EV industry, business orientation, and technical proficiency in AI and software development. Technical Proficiency is crucial, requiring a deep understanding of software development, data analytics, and mobile application design, including expertise in AI-driven technologies and systems integration to create a seamless and user-friendly platform. Industry Knowledge ensures familiarity with the electric vehicle market, charging infrastructure, and emerging trends in renewable energy, enabling the team to navigate industry complexities and address the specific needs of EV users. Business Orientation involves strong business acumen to identify market opportunities, develop strategic plans, and manage operational aspects, including skills in financial management, marketing, sales, and customer relationship management. Additionally, Networking Capabilities are vital for establishing and maintaining relationships with key stakeholders, such as charging network providers, EV dealerships, government agencies, and investors, facilitating collaboration, securing partnerships, and driving business growth.

8. Stakeholders

The stakeholders include a diverse group essential to its success and impact. EV owners are primary users who rely on the app for efficiency charging solutions and route planning. Charging Network Providers are critical partners, benefiting from enhanced visibility and user engagement through the platform. EV dealerships collaborate to offer additional services to their customers. Government Agencies play a role in regulatory oversight and infrastructure development, facilitating the expansion of charging networks. Renewable Energy Providers partner to promote green charging options, aligning with sustainability goals. Investors are

crucial for funding and scaling operations, while Urban Planners and Public Transportation Authorities help optimize charging station placements, improving accessibility and urban mobility. These stakeholders collectively contribute to the ecosystem, driving the growth and adoption of EVs and supporting the transition to sustainable transportation.

9. Risk Assessment and Mitigation

Risk	Impact	Likelihood	Risk Mitigation Technique
Technical Failures	High	Medium	Regular maintenance, robust testing, and having a backup system
Data Breaches	High	Medium	Implement strong cybersecurity measures and regular audits
Market Adoption	High	Medium	Extensive marketing, user education, and partnerships
Regulatory Changes	Medium	Low	Stay updated with regulations, engage with policymakers.
Competition from Established Players	High	Medium	Differentiate through unique features and superior user experience.
Funding Shortages	High	Medium	Diversify funding sources, maintain a solid financial plan
User Retention	Medium	High	Regularly update app features, engage users through community building
Partnership Failures	Medium	Low	Establish clear agreements, maintain strong communication
Technological Advancements	Medium	Low	Continuous R&D and staying ahead of tech trends
Economic Downturn	Medium	Low	Develop a flexible business plan, focus on essential services

Based on the findings of this feasibility study, the project exhibits potential for success in the growing electric vehicle (EV) market in Jordan. However, it is essential to consider and address certain risks to ensure long-term sustainability and profitability. One significant concern highlighted in the sensitivity analysis is the risk of a 10% drop in projected revenues, which would result in a negative Net Present Value (NPV) and a profitability index of less than 1. To mitigate this risk, it is crucial to implement a robust marketing strategy that focuses on extensive user education and acquisition and forming strategic partnerships.

Furthermore, several other risk mitigation techniques have been identified to safeguard the project's viability. Regular maintenance and robust testing protocols should be established to

prevent technical failures. Strong cybersecurity measures and regular audits are necessary to protect against data breaches. Engaging with policymakers and staying updated with regulatory changes will help navigate any unforeseen regulatory shifts. To counter competition from other players, the startup should continue differentiating itself through unique features and superior user experience. Diversifying funding sources and maintaining a solid financial plan are critical to avoid funding shortages. Regular updates to app features and community engagement will be key to ensuring high user retention rates. Lastly, establishing clear agreements and maintaining strong communication with partners (charging network providers) will minimize the risk of partnership failures, while continuous research and development (R&D) will help stay ahead of technology advancements.

10. Conclusion

The feasibility study demonstrates a potential for success in the growing EV market. By leveraging technological features, reliable services, and strategic partnerships, the EV charging app can meet the needs of both EV owners and charging network providers. The business model, which includes two revenue streams and a well-structured cost framework, ensures financial sustainability. Integration with various sectors enhances marketability and societal impact while a dedicated skills team underpins operational excellence. With thorough risk management strategies, the startup is well-positioned to participate in the EV charging ecosystem, driving adoption, and contributing to sustainable transportation.

In conclusion, the project demonstrates promising feasibility indicators based on the assumptions formed during the development of this study. Nonetheless, entrepreneurs 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 validity.

Disclaimer

The Ministry of Digital Economy and Entrepreneurship (MoDEE) and Istdama 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.

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