



Pre-feasibility Study

SMART HOME AUTOMATION SERVICES

December 2023

“The figures and financial projections are approximate due to fluctuations in exchange rates, energy costs, and fuel prices etc. Users are advised to focus on understanding essential elements such as production processes and capacities, space, machinery, human resources, and raw material etc. requirements. Project investment, operating costs, and revenues can change daily. For accurate financial calculations, utilize financial calculators on SMEDA's website and consult financial experts to stay current with market conditions”

Small and Medium Enterprises Development Authority
Ministry of Industries and Production
Government of Pakistan

Table of Contents

1. DISCLAIMER	3
2. EXECUTIVE SUMMARY	4
3. INTRODUCTION TO SMEDA	5
4. PURPOSE OF THE DOCUMENT	5
5. BRIEF DESCRIPTION OF PROJECT & Services	6
5.1. Process Flow.....	7
5.2. Machinery and Equipment	9
5.3. Home Automation Services	12
5.4. Key Benefits	14
5.5. Installed and Operational Capacities	14
6. CRITICAL FACTORS	15
7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT	16
8. POTENTIAL TARGET MARKETS.....	16
9. PROJECT COST SUMMARY	16
9.1. Project Economics	16
9.1.1. Financial Feasibility Analysis.....	16
9.1.2. Financial Feasibility 50% Debt.....	17
9.2. Project Cost.....	17
9.2.1. Land.....	18
9.2.2. Building	18
9.2.3. Machinery and Tools Requirement	19
9.2.4. Furniture & Fixtures Requirement	19
9.2.5. Office Equipment Requirement.....	19
9.2.6. Office Vehicle Requirement.....	20
9.2.7. Pre-Operating Cost	20
9.2.8. Security against Building Rent	21
9.2.9. Breakeven Analysis	21
9.2.10. Revenue Generation.....	21
9.2.11. Variable Cost Estimate	22
9.2.12. Human Resource Requirement	22
10. CONTACT DETAILS.....	22
11. USEFUL LINKS	24
12. ANNEXURES	25
12.1. Income Statement	25
12.2. Balance Sheet	26
12.3. Cash Flow Statement	27

13. KEY ASSUMPTIONS.....	28
13.1. Operating Cost Assumptions.....	28
13.2. Revenue Assumptions	28
13.3. Financial Assumptions	28
13.4. Cash Flow Assumptions.....	29

1. DISCLAIMER

This information memorandum is to introduce the subject matter and provide a general idea and information on the said matter. Although, the material included in this document is based on data/information gathered from various reliable sources; however, it is based upon certain assumptions, which may differ from case to case. The information has been provided on, as is where is basis without any warranties or assertions as to the correctness or soundness thereof. Although, due care and diligence has been taken to compile this document, the contained information may vary due to any change in any of the concerned factors, and the actual results may differ substantially from the presented information. SMEDA, its employees or agents do not assume any liability for any financial or other loss resulting from this memorandum in consequence of undertaking this activity. The contained information does not preclude any further professional advice to be obtained by the user. The prospective user of this memorandum is encouraged to carry out additional diligence and gather any information which is necessary for making an informed decision, including taking professional advice from a qualified consultant/technical expert before taking any decision to act upon the information.

For more information on services offered by SMEDA, please contact our website:

www.smeda.org.pk

Document Control

Document No.	225
Revision	01
Prepared by	SMEDA-Punjab
Revision Date	December 2023
For information	helpdesk.punjab@smeda.org.pk

2. EXECUTIVE SUMMARY

This document on “Smart Home Automations Services” provides information about establishing a business for provision of services to make the homes safe and secure and to enjoy a more convenient living by automating different appliances in the homes. The basic concept of home automation system is to provide people a comfortable, safe, convenient and highly efficient life environment. Smarter homes allow people to save money, be more environmentally friendly, feel more secure and enjoy a variety of conveniences that make the everyday living easier and less expensive to maintain.

In recent years, local tech companies in Pakistan have started offering a range of home automation services, from end-to-end security arrangements to smart appliances installations. As Pakistani standards of living are coming at par with international living standards, the idea of home automation is becoming popular in the local population. During the past five years, the home automation market witnessed a significant growth in Pakistan due to a growing awareness about this technology and the offered benefits of higher security and convenience.

The Smart Home Automation Services business is proposed to be ideally located in the metropolitan cities of Karachi, Islamabad, Lahore Rawalpindi, Multan, Gujranwala, Faisalabad, Quetta and Peshawar. These cities are preferred, because majority of upper class of Pakistan resides in these cities and there is an easy availability of relevant experts and skilled labor.

This pre-feasibility document provides details for setting up a business to offer Smart Home Automation Services. The proposed business has a capacity of providing services for 8 hours a day, 280 days a year. The service delivery capacity utilization in the first year of operation is assumed to be 60%, while maximum capacity utilization is assumed to be 100%, achieved in the fifth year of operation.

The proposed project will be set up in a rented building having an area of 1,125 sq. ft. (5 Marla). The project requires a total investment of PKR 7.81 million. This includes capital investment of PKR 7.18 million and working capital of PKR 0.63 million. The project will be established using 100% equity financing. The Net Present Value (NPV) of project is PKR 19.58 million with an Internal Rate of Return (IRR) of 65% and a Payback period of 2.32 years. The proposed project will achieve its breakeven point at capacity of 56% (4,184 service jobs) at gross revenue of PKR 16.20 million.

The proposed project may also be established using leveraged financing. At 50% debt financing at a cost of 26%, the proposed project provides Net Present Value (NPV) of PKR 19.45 million, Internal Rate of Return (IRR) of 66% and Payback period of 2.27 years. The proposed project will achieve its estimated breakeven point at capacity of 65% (4,811 service jobs) with breakeven revenue of PKR 18.63 million.

The proposed project will provide employment opportunities to 15 to 20 people. The legal business status of this project is proposed as “Sole Proprietorship”. High return on investment and steady growth of business is expected with the entrepreneur having some prior experience or technical education in the related field of business.

3. INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out 'sectoral research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives. Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need-based capacity building programs of different types in addition to business guidance through help desk services.

National Business Development Program for SMEs (NBDP) is a project of SMEDA, funded through Public Sector Development Program of Government of Pakistan.

The NBDP envisages provision of handholding support / business development services to SMEs to promote business startup, improvement of efficiencies in existing SME value chains to make them globally competitive and provide conducive business environment through evidence-based policy-assistance to the Government of Pakistan. The Project is objectively designed to support SMEDA's capacity of providing an effective handholding to SMEs. The proposed program is aimed at facilitating around 314,000 SME beneficiaries over a period of five years.

4. PURPOSE OF THE DOCUMENT

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, marketing, finance and business management.

The purpose of this document is to provide information to the potential investors about establishing “Smart Home Automation Services” business. The document

provides a general understanding of the business to facilitate potential investors in crucial and effective investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attains greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error, and certain industrial norms that become a guiding source regarding various aspects of business setup and its successful management.

Apart from carefully studying the whole document one must consider critical aspects provided later on, which form the basis of any investment decision.

5. BRIEF DESCRIPTION OF PROJECT & SERVICES

This document provides details for setting up the business of “Smart Home Automation Services”. It involves customization of an application¹ for home automation, for having an improved operational control of different devices and equipment in the home.

The business represents an attractive opportunity in a country like Pakistan where Information and Communication Technology (ICT) has been growing at a fast pace and over the years, has achieved a deep penetration in the local market. Home Automation market is not fully established in Pakistan as there are not many service providers available. Easy access to smartphones, growing awareness of technology and easy availability of software engineers, technical experts and skilled labor, makes the proposed business an attractive investment proposition.

As of now, this technology is being more commonly used in offices and commercial places, but this trend is changing fast and more and more people are getting interested to have automation systems in their homes as well. Demand for luxury apartments is rising in Pakistan and installation of smart home automation systems is considered to be a standard practice in such apartments.

Home automation services include development of computer application for having automated control on different types of appliances in the homes. These include installation of smart switches for lighting control, smart plugs for side lamps, smart home theater systems for music, fire alarms/sensors to detect fire, smart doorbell with integrated camera, etc. These devices may be used standalone or may be used in combination with other devices. All of these devices and sensors are connected to each other and controlled through an application.

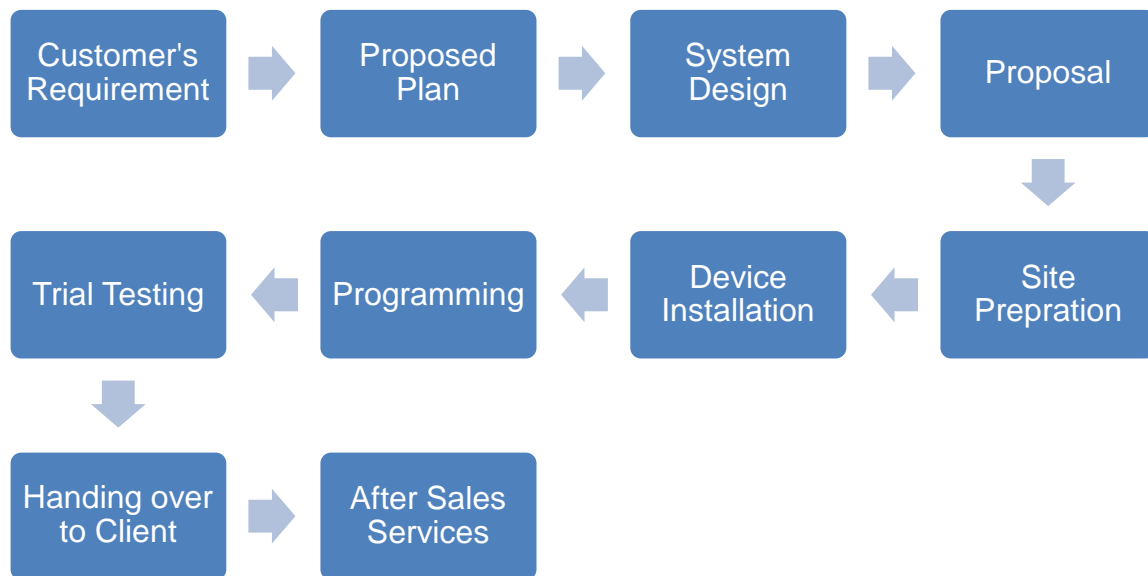
The proposed project will be started in a rented building covering 1,125 sq. ft. (5 Marla). Human resource cost is the major cost for running this business. In term of capital cost, office vehicle, office equipment and furniture and fixture contribute 92% towards the total project cost. Total employment required for this project is 17

¹ An application, referred to as a mobile app or simply an app, is a computer program or software application designed to run on devices such as a smart phone, tablet or watch.

persons. The key to success of the proposed business is the provision of high-quality service by engaging qualified human resource; to achieve a high customer satisfaction. The services offered by the proposed project aim to provide added security, comfort, convenience and energy saving benefits to the customers.

5.1. Process Flow

Figure 1: Process Flow



Customer's Requirement

The step is the communication of the customer requirements to home automation service provider. The customer defines the required level of automation and the details of desired services and features. This may include lights controls, fan controls, main gate control, AC control, curtain control, etc.

Proposed Plan

The technical representative of the service provider will assess the customer requirements, prepare a proposed plan and share that with the customer. This step helps in avoiding any gap between the service provider's understanding and the customer's expectations. The customer may suggest some changes in the plan which will be accordingly accommodated by the service provider.

System Design

After agreeing on the requirements of client, the technical staff prepares the system design i.e., which includes the details about the number and types of devices, their functions and the methods in which they will be installed in the home.

The technical staff will assess compatibility of the devices that will be used in the home automation. Some compatibility issues may arise if the customer requires using devices of some specific brands as some of those devices may not properly integrate with the rest of the system due to different specifications.

Proposal

After designing the system, the business representative will assess the financial cost of the proposal and prepare the budget. The budget enables him to quote the cost of the project after considering the required profit percentage. The proposal will be presented to the customer to obtain his approval of final price.

Site Preparation

For making it cost effective, it is preferable that home automation is carried out at the stage of house construction. If a house is already constructed, additional costs will have to be incurred. As part of site preparation, the technical staff will use equipment and material like pipes, wiring, etc. which will require making holes in the walls and constructing some additional permanent structures in the house.

Device Installation

After site preparation, the technical staff will install the devices at the proposed locations. These devices include motors, sensors, alarms, etc. as per the customer's requirements.

Figure 1 shows some devices which may be connected by the automation system and can be directly operated by the designed application.

Figure 2: Targeted Devices

				
Fan	CCTV	Gate	Bulb	AC

Programming of Devices and Design of Application

After installation of the devices, the next step is to program those devices to function as per the design. The technical staff will design a smart application (app), which will be used for control. This application can be installed on smart phone and/or laptop/desktop of the customer. The designed application controls all the devices that are connected to it via sensors. Smart home applications make it possible to coordinate all the connected devices using a single app. The design of these apps are the best and the easiest way to create automated routines and synchronize all

smart home devices in one place. After designing of app and programming of devices, the devices can now be controlled from any part of the world by using the designed app.

Trial Testing

At this stage all the installed devices are extensively tested to ensure that they function as per the design and as per the expectations of the service provider and the customer. The testing is done in two steps; first by testing it from within the house and second by testing it from remote locations. As a result of testing, there may be a need to fix any errors in programming and the controlling application.

Handing Over

After extensive testing of the installed devices and addressing any issues in the testing phase, the house is handed over to the owner. The system will start working at this stage at its full designed potential.

After Sales Services

If the installed devices experience any malfunction or there is need to update the software, the customer will contact the service provider. The management will appoint a technical person to provide the required after-sales service support.

5.2. Machinery and Equipment

Machinery and equipment required for home automation services offered by the proposed project are briefly discussed below:

Splicing Machine

Fusion splicer is the machine used to weld (fuse) two optical fibers together. This process is called fusion splicing. The fiber ends are prepared, sliced, and placed in alignment fixtures on the fusion splicer.

Figure 3: Splicing Machine



Optic Fiber Tool Kit

Various types of fiber optic tools are used in the fiber optic installation and maintenance works. Fiber optic test tool kit is used to inspect fiber optic equipment during installation or trouble shooting. Fiber optic termination kit is used for fiber termination and contains tools, to be used to strip, prep, terminate, crimp, polish and inspect fiber optic cable connectors.

Figure 4: Optic Fiber Tool Kit



Fluke

Fluke is a standard diagnostic tool for technicians in the electrical/electronic industries. Fluke analyzes power quality issues, calculates the costs of wasted energy, minimizes downtime and quickly troubleshoots power quality issues.

Figure 5: Fluke



Cable Crimping Tool Kit

A crimping tool is a device that is used to make cold weld joints between wires and a connector through deforming one or both of them to hold the other.

Figure 6: Cable Crimping Tool Kit



Drill Set

A drill or drilling machine is a tool used for making holes or driving fasteners. It is fitted with a bit, a drill or driver, depending on application, secured by a chuck. Some power drills also include a hammer function. Drills vary widely in speed, power, and size.

Figure 7: Drill Set



Wall Chaser

Wall chasers are a twin bladed power tool used for cutting narrow channels into brick, stone or concrete walls, perfect for electricians and plumbers.

Figure 8: Wall Chaser

General Tool Kit

General Tool Kit includes screw driver set, tape measure, hammer, duct tape, flash light, set of pliers and utility knife etc. These are used in different regular installation works.

Figure 9: General Tool Kit

5.3. Home Automation Services

The cost of the equipment, devices and any associated construction cost will be paid directly by the customer. The proposed business will only charge professional fees for providing services of designing and installation of home automation systems. Some of the home automation services offered by the proposed project are briefly discussed below:

Lighting and Appliances Control System

Lighting and lighting controller systems are the most important parts of home automation. Basically, a light controller system can detect a motion within a closed area and can turn on the lights automatically. A light controller circuit is connected to a motion sensor. The motion sensor activates the lighting controller using its relay

when it detects a motion in its area of control. It is easy to find sensors that are capable of managing such functionality in the local market.

Automatic smart plugs/sockets are used to control different electric appliances through the application.

Door Access System

With automated door locks, the owner can lock the doors with just one touch on his/her smart device from any place. The owner will also be alerted, whenever someone tries to enter the house; allowing constant monitoring, even when the owner is away from home. A smart doorbell is connected with the door that notifies the smartphone or other electronic device of the home owner when a visitor arrives at the door. It activates when the visitor presses the button of the doorbell, or alternatively, when the doorbell senses a visitor with its built-in motion sensors.

The home owner can monitor the open/closed status of a door, window, cabinet, safe, or any other open/close object with this system.

Surveillance System

Many home owners opt for full CCTV surveillance system, with additional features covering a wider area and recording even in low-light conditions. However, a more practical solution is a video door phone. These systems track physical movement in the user home with the use of security camera and can assist in home surveillance when home owner is away from his house. Automatic alarm system can be activated and also remotely in case of any unauthorized access.

Fire and Gas Alarm System

Fire's eruption and gas leak causes serious damage and disrupts daily life in a devastating manner. The automated homes are under constant surveillance by installation of a number of sensors at tactical points. These sensors include smoke detectors, temperature sensor, heat sensor and gas sensor. Each sensor plays a vital role in detecting a fire and gas leakage. When these detectors senses smoke or gas leakage, these may either sound an alarm in the room or house, or send an alert signal to the owner about the fire or gas leakage. Live video coverage of the home is also used to detect the fire.

Home Weather System

Another automation option is to access the air-conditioning (AC) or heating in the home from a mobile device and set it according to one's need even if one is not there. The automation system can enable the home owner to switch off an AC or to switch on the heater before even entering the house.

Solar Panel Switching System

Home automation also provides automatic turning on and off solar panel electric supply through the application. The home owner can also create a schedule through the application. This schedule enables automatic turning on and off the solar

electricity supply to the main electric system of the home at the time defined by the home owner.

5.4. Key Benefits

Key benefits of home automation are as given as under:

Convenience

Home automation system makes it convenient to monitor, control and automate all devices and appliances within or outside from home.

Safety

Home automation solution can provide added security to home. An automated home allows keeping property and assets safe and secure.

Energy Savings

Home automation works efficiently and saves money on utilities. It can do tasks simultaneously without thinking. Smart light bulbs save energy, because they operate only when they are needed.

Customization

Smart home offers different customization options. A schedule can be set for turning on or off lights, air conditioners and/or other appliances at set times.

5.5. Installed and Operational Capacities

The proposed project will have maximum operational capacity of 4,480 service hours in a year. It is estimated that the business will be able to install 6,945 systems during the service hours available during a year. It is further assumed that the proposed project will achieve 60% of its total capacity during first year of its operations. The operational capacity will increase at the rate of 10% per annum to reach the maximum 100% in the fifth year.

Table 1 and Table 2 show the installed and service delivery capacity of the proposed business.

Table 1: Total Man-hours

Description	No. of Persons(A)	Per day working hours (B)	Annual working days (C)	Maximum Annual Working Hours (D=A*B*C)
Electrical Instrumentation Engineer (EIE)	2	8	300	4,800

Table 2: Installed and Service Capacity

Services	Basis of Charges	Annual Working Hours	Service Ratio	Working Hours	Required Man hours/ installation	Maximum No of Installation
Lighting Control System	No of Controllers	4,480	2%	96.00	1.0	96
Door Access System	No of Doors		15%	720.00	1.0	720
Solar Panel Switching System	No of Controllers		25%	1,200.00	1.0	1,200
Surveillance System	No of Cameras		50%	2,400.00	0.5	4,800
Fire Alarm System	No of Sensors		5%	240.00	0.5	480
Gas Leakage Detection System	No of Sensors		2%	96.00	1.0	96
Home Weather System	No of Sensors		1%	48.00	1.0	48
Total			100%	4,800		7,440

6. CRITICAL FACTORS

Before making the decision to invest in the business of Smart Home Automation Services, one should carefully analyze the associated risk factors. The important considerations in this regard may include:

- Awareness of international and local markets trends
- Knowledge of modern technologies to the entrepreneur
- Employment of specialist engineers
- Availability of highly skilled labor
- Provision of quality services
- Usage of modern equipment
- Timely resolving of queries
- Provision of after sales services and;
- Regular feedback from the customers

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

Cities like Lahore, Karachi, Islamabad, Rawalpindi, Multan, Gujranwala, Faisalabad, Quetta and Peshawar have the largest potential for investment in the business of home automation services. Investment potential is high in these cities because of existence of large-scale businesses and a larger share of upper middle and upper population classes. Ease of doing business, availability of related equipment, skilled labor and of high-speed internet also make such cities suitable to establish this business.

8. POTENTIAL TARGET MARKETS

Homeowners in upper to upper-middle class of the local population are the major potential customers of the proposed business. Larger homes are more profitable due to higher automation needs in those homes. Majority of the people from these population segments are educated and inclined towards adopting latest technologies. Home automation features also act as a status symbol in those classes which also trigger a demand for these services.

9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of the business of Smart Home Automation Services. Various costs and revenue related assumptions along with results of the analysis are outlined in this section.

The projected Income Statement, Cost of Goods Sold, Cash Flow Statement and Balance Sheet are attached as Annexure.

All the figures in this financial model have been calculated after carefully considering the relevant assumptions and target market.

9.1. Project Economics

All the figures in this financial model have been calculated after carefully considering the relevant assumptions and the target market.

9.1.1. Financial Feasibility Analysis

The financial feasibility analysis provides the information regarding projected Internal Rate of Return (IRR), Net Present Value (NPV) and Payback period of the study, which is shown in Table 3.

Table 3: Financial Feasibility Analysis

Description	Ratios
IRR	65%
NPV (PKR)	19,580,315
Payback Period (years)	2.32
Projection Years	10

Discount Rate used for NPV	25%
----------------------------	-----

9.1.2. Financial Feasibility 50% Debt

The financial feasibility analysis provides the information regarding projected IRR, NPV and payback period of the study on the basis of Debt: Equity Model (50:50), which is shown in Table 4.

Table 4: Financial Feasibility Debt Financing

Description	Ratios
IRR	66%
NPV (PKR)	19,447,277
Payback Period (years)	2.27
Projection Years	10
Discount Rate used for NPV	26%

9.2. Project Cost

Total cost of the project has been calculated to be PKR. 7,807,935. The project will be financed through 100% Equity. Table 5 provides the detail of cost calculated for the proposed manufacturing unit.

Table 5: Project Cost

Description of Costs	Amount (PKR)
Building/Infrastructure/Renovation Cost	406,875
Machinery and Tools Requirement	815,000
Furniture & Fixtures	905,000
Office Equipment Requirement	1,905,500
Office Vehicle Requirement	2,438,140
Pre-Operating Cost	337,420
Security against building	375,000
Total Capital Cost	7,182,935
Working Capital	
Upfront building rent	125,000
Cash	500,000
Working Capital Requirement	625,000
Total Project Cost	7,807,935

9.2.1. Land

The Smart Home Automation Services will be started in a rented building with an area of 1,125 sq. ft. (5 Marla). Suitable location for setting up of home automation business like this can be easily found on rent. Therefore, no land cost has been added to the project cost. The breakup of the space requirement is provided in Table 6.

Table 6: Breakup of Space Requirement

Area Description	% Break Up	Area (sq. ft.)
Executive Office	16%	180
Staff Workstations	32%	360
Display Room	20%	225
Conference Room	11%	120
Store	13%	144
Kitchen	4%	48
Washrooms	4%	48
Total Area	100%	1,125

9.2.2. Building

There will be no cost of building since Smart Home Automation Services business will be started in a rented building. However, there will be a renovation cost required to make the building ready to use for the business. Therefore, building renovation and interior decoration cost is included in the capital investment. The proposed business requires estimated electricity load of 2-3 KW for which an electricity connection under the General Supply Tariff-Commercial single phase will be required. Cost of such electricity connection has not been included in the capital cost since connections are normally already available in such rented premises. Building rent of PKR 125,000 per month has been included in the operating cost. Table 7 Provides details of building renovation and interior decoration cost.

Table 7: Building Renovation Cost

Cost Item	Total Liter / Area / Number	Cost/Unit/ Sq.feet	Total Cost (PKR)
Paint Cost	113	750	84,375
Labour Cost	11,250	10	112,500
Wall Racks	8	20,000	160,000
Curtains	4	7,500	30,000

Blinds	4	5,000	20,000
Total			406,875

9.2.3. Machinery and Tools Requirement

Table 8 provides details of machinery and equipment required for the project.

Table 8: Machinery and Tools Requirement

Cost Item	Number of Items	Unit Cost (PKR)	Total Cost (PKR)
Splicing Machine	1	350,000	350,000
Optic Fiber Tool Kit	1	115,000	115,000
Fluke	2	65,000	130,000
Cable Crimping Tool Kit	2	17,500	35,000
Drill Set	2	15,000	30,000
Wall Chaser	2	15,000	30,000
General Tool Kit	5	25,000	125,000
Total			815,000

9.2.4. Furniture & Fixtures Requirement

Table 9 provides details of the furniture and fixture requirement of the project.

Table 9: Furniture and Fixtures Requirement

Cost Item	Number of Items	Unit Cost (PKR)	Total Cost (PKR)
Executive Chairs	1	20,000	20,000
Executive Table	1	40,000	40,000
Staff Tables	8	25,000	200,000
Staff Chairs	15	12,000	180,000
Visitors' Chairs	10	12,000	120,000
Cabinets	15	15,000	225,000
Adjustable Steel Racks	8	15,000	120,000
Total			905,000

9.2.5. Office Equipment Requirement

Details of office equipment required for the project is provided in Table 10.

Table 10: Office Equipment Requirement

Cost Item	Number of Items	Unit Cost (PKR)	Cost (PKR)
Air Conditioners	3	200,000	600,000
Laptop / Computer	10	100,000	1,000,000
Printer	2	50,000	100,000
Water Dispenser	1	40,000	40,000
Security System (4 Cams , 2 MP)	1	3,500	3,500
DVR	1	15,000	15,000
LED/LCD	1	50,000	50,000
WI-FI/ Internet Connection	2	7,500	15,000
Ceiling Fan	5	12,500	62,500
Exhaust Fan	3	6,500	19,500
Total			1,905,500

9.2.6. Office Vehicle Requirement

Details of office vehicle required for the project is provided in Table 11.

Table 11: Office Vehicle Requirement

Cost Item	Number of Vehicles	Unit Cost (PKR)	Total Cost (PKR)
Carry Van	1	1,940,000	1,940,000
Motorcycle	3	158,000	474,000
Registration / Transfer Charges			24,140
Total			2,438,140

9.2.7. Pre-Operating Cost

Details of pre-operating cost for the project are provided in Table 12.

Table 12: Pre-Operating Cost

Cost Item	Total-(PKR)
Administrative expense	295,000
Utilities exp.	42,420
Total	337,420

9.2.8. Security against Building Rent

Table 13 provides details of security against rented building.

Table 13: Security against Building Rent

Cost Item	No of Months	Monthly Rent (PKR)	Total Cost (PKR)
Security against Building	3	125,000	375,000

9.2.9. Breakeven Analysis

Breakeven analysis is provided in Table 14.

Table 14: Breakeven Analysis

Particulars	Amount First Year (PKR)	Ratios
Sales (PKR) – A	17,289,000	100%
Variable Cost (PKR) – B	10,041,000	58%
Contribution (PKR) (A-B) = C	7,248,000	42%
Fixed Cost (PKR) – D	6,791,293	39%
Break-Even Revenue	16,199,594	
Break-Even Units (no. of hours)	4,184	
Break-Even Capacity	56%	

9.2.10. Revenue Generation

Based on the 60% capacity utilization of the business, sales revenue during the first year of operations is estimated in Table 15.

Table 15: Revenue Generation

Services	Services rendered during the year (A)	Service Charges (PKR) (B)	Annual Revenue (PKR) (A*B)
Lighting and Appliances Control System	58	7,500	435,000
Door Access System	432	3,000	1,296,000
Solar Panel Switching System	720	7,000	5,040,000
Surveillance System	2,880	3,000	8,640,000
Fire Alarm System	288	3,500	1,008,000
Gas Leakage Detection System	58	12,500	725,000

Home Weather System	29	5,000	145,000
Total Revenue			17,289,000

9.2.11. Variable Cost Estimate

Variable costs of the project have been provided in detail in Table 16.

Table 16: Variable Cost Estimate

Cost Item	Amount (PKR)
Staff salaries	10,824,000
Office vehicle running expenses-(Sites visits)	504,000
Travelling expense-(Admin staff)	148,200
Communications expense (phone, mail, internet, etc.)	444,600
Office expenses (stationery, entertainment, janitorial services, etc.)	550,200
Total (PKR)	12,471,000

9.2.12. Human Resource Requirement

For the 1st year of operations, the Smart Home Automation Services shall require the workforce as provided in Table 17.

Table 17: Human Resource Requirement

Post	No of Personnel	Monthly Salary (PKR)	Annual Salary (PKR)
Manager	1	125,000	1,500,000
Electrical Instrumentation Engineer (EIE)	2	85,000	2,040,000
Assistant EIE	4	45,000	2,160,000
Software Engineer (SE)	1	75,000	900,000
Assistant (SE)	2	45,000	1,080,000
Labour	4	35,000	1,680,000
Accountant	1	45,000	540,000
Marketing Officer	1	45,000	540,000
Office Boy	1	32,000	384,000
Total (PKR)			10,824,000

10. CONTACT DETAILS

Details of suppliers of Machinery and Equipment are provided in Table 18.

Table 18: Suppliers of Machinery and Equipment

Name of service provider	Type of services	Email/ Website	Contact Number
ASG Systems (Lahore)	Gate Automation, Electric Fencing, Traffic Barriers, Home Automation	www.asg.com.pk	042-36307248
Concord Technologies Inc. (Lahore)	Home Automation, Electric Fencing & Gate Motors	www.concord-technologies.com	0320-2662673
Time & Xcess (Lahore)	Office Automation Systems - Office Automation Products- Building Management System - Fire Alarm System	www.timeandxcess.com.pk	0321-8471945
Techno One (Lahore)	Automatic Doors, Gates, Barriers, RFID Systems, Shutters, Dock Levelers, Road Blockers, Fire Doors	www.technoone.pk	042-35762213
Avatar Smart Homes (Lahore)	Wireless Home Security System	www.avatarsmarthomes.com.pk	0311-1611117
Net Pac (Lahore)	Home Automation and Surveillance Services	www.netpac.com.pk	042-111638722
ZH Automations (Lahore)	Smart Home Automation Services	www.zhautomations.com	042-35700241
Connectify Pakistan (Karachi)	Smart Home Automation Services	www.connectify.com.pk	0300-2334333
Gul Abad Coloni No 1 (Peshawar)	Smart Home Automation Services		091-2602704
iTECH (Islamabad)	Smart Home Automation Services	itech.pk	0321-5352420
Bilal Bajwa House (Gujranwala)	Smart Home Automation Services		0301-8579115

11. USEFUL LINKS

Table 19: Useful Links

Name of Organization	Website address
Small and Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
National Business Development Program (NBDP)	www.nbdp.org.pk
Ministry of Information Technology	www.moitt.gov.pk
Information Technology Department Government of Punjab	www.punjab.gov.pk
Department of Science & Technology and Information Technology, Government of Pakistan	stit.kp.gov.pk
Information Science and Technology Department Government of Sindh	istd.sindh.gov.pk
Science and Information Technology Government of Balochistan	balochistan.gov.pk
IT Board of AJ&K	itb.ajk.gov.pk

12. ANNEXURES

12.1. Income Statement

Calculations	SMEDA									
Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue from services	17,289,000	21,831,114	27,025,708	32,913,157	39,619,256	42,907,654	46,468,989	50,325,916	54,502,966	59,026,713
<i>Cost of sales</i>										
Staff salaries	7,860,000	8,436,400	9,055,069	9,719,108	10,431,842	11,196,844	12,017,946	12,899,262	13,845,208	14,860,523
Office vehicle running expenses	534,000	578,322	626,323	678,308	734,607	795,579	861,613	933,126	1,010,576	1,094,454
Total cost of sales	8,394,000	9,014,722	9,681,392	10,397,415	11,166,449	11,992,424	12,879,559	13,832,388	14,855,784	15,954,977
Gross Profit	8,895,000	12,816,392	17,344,316	22,515,742	28,452,807	30,915,231	33,589,431	36,493,527	39,647,183	43,071,736
<i>General administration & selling expenses</i>										
Staff Salaries	2,964,000	3,181,360	3,414,660	3,665,068	3,933,840	4,222,321	4,531,958	4,864,302	5,221,017	5,603,892
Administration benefits expense	541,200	580,888	623,486	669,209	718,284	770,958	827,495	888,178	953,311	1,023,221
Building rental expense	1,500,000	1,650,000	1,815,000	1,996,500	2,196,150	2,415,765	2,657,342	2,923,076	3,215,383	3,536,922
Utilities	509,040	553,615	602,093	654,816	712,157	774,518	842,340	916,101	996,320	1,083,565
Travelling expense	148,200	159,068	170,733	183,253	196,692	211,116	226,598	243,215	261,051	280,195
Communications expense (phone, fax, mail, internet, etc.)	444,600	477,204	512,199	549,760	590,076	633,348	679,794	729,645	783,153	840,584
Office vehicles running expense	504,000	545,832	591,136	640,200	693,337	750,884	813,207	880,704	953,802	1,032,967
Office expenses (stationery, entertainment, janitorial services, etc.)	550,200	590,548	633,855	680,338	730,229	783,779	841,256	902,948	969,165	1,040,237
Promotional expense	259,335	327,467	405,386	493,697	594,289	643,615	697,035	754,889	817,544	885,401
Depreciation expense	950,234	950,234	950,234	950,234	950,234	950,234	647,052	1,482,750	1,482,750	1,482,750
Amortization of pre-operating costs	67,484	67,484	67,484	67,484	67,484	-	-	-	-	-
Subtotal	8,438,293	9,083,699	9,786,265	10,550,560	11,382,771	12,156,538	12,764,076	14,585,807	15,653,497	16,809,732
Operating Income	456,708	3,732,693	7,558,051	11,965,182	17,070,036	18,758,693	20,825,355	21,907,720	23,993,686	26,262,003
Gain / (loss) on sale of machinery & equipment	-	-	-	-	-	-	203,750	-	-	-
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	476,375	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	609,535	-	-	-
Earnings Before Interest & Taxes	456,708	3,732,693	7,558,051	11,965,182	17,070,036	18,758,693	22,115,015	21,907,720	23,993,686	26,262,003
Earnings Before Tax	456,708	3,732,693	7,558,051	11,965,182	17,070,036	18,758,693	22,115,015	21,907,720	23,993,686	26,262,003
Tax	216,113	684,808	2,010,317	3,552,813	5,339,512	5,930,542	7,105,255	7,032,702	7,762,790	8,556,701
NET PROFIT/(LOSS) AFTER TAX	240,595	3,047,885	5,547,733	8,412,369	11,730,524	12,828,151	15,009,760	14,875,018	16,230,896	17,705,303

12.2. Balance Sheet

Calculations	SMEDA										
Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets											
<i>Current assets</i>											
Cash & Bank	500,000	2,076,294	5,508,010	10,460,331	16,921,116	24,951,643	32,394,209	38,455,017	43,772,042	49,411,338	55,727,630
Pre-paid building rent	125,000	137,500	151,250	166,375	183,013	201,314	221,445	243,590	267,949	294,743	-
Total Current Assets	625,000	2,213,794	5,659,260	10,626,706	17,104,129	25,152,957	32,615,654	38,698,607	44,039,990	49,706,082	55,727,630
<i>Fixed assets</i>											
Building/Infrastructure	406,875	366,188	325,500	284,813	244,125	203,438	162,750	122,063	81,375	40,688	-
Machinery & equipment	815,000	692,750	570,500	448,250	326,000	203,750	81,500	1,396,767	1,187,252	977,737	768,222
Furniture & fixtures	905,000	769,250	633,500	497,750	362,000	226,250	90,500	-	-	-	-
Office vehicles	2,438,140	2,072,419	1,706,698	1,340,977	975,256	609,535	243,814	4,951,292	4,208,598	3,465,905	2,723,211
Office equipment	1,905,500	1,619,675	1,333,850	1,048,025	762,200	476,375	190,550	3,265,692	2,775,838	2,285,985	1,796,131
Security against building	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000
Total Fixed Assets	6,845,515	5,895,282	4,945,048	3,994,815	3,044,581	2,094,348	1,144,114	10,110,814	8,628,064	7,145,313	5,662,563
<i>Intangible assets</i>											
Pre-operation costs	337,420	269,936	202,452	134,968	67,484	-	-	-	-	-	-
Total Intangible Assets	337,420	269,936	202,452	134,968	67,484	-	-	-	-	-	-
TOTAL ASSETS	7,807,935	8,379,011	10,806,760	14,756,488	20,216,194	27,247,304	33,759,768	48,809,420	52,668,054	56,851,395	61,390,193
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable		378,600	406,536	436,535	468,749	503,343	540,491	580,384	623,223	669,227	718,629
Other liabilities											
Total Current Liabilities	-	378,600	406,536	436,535	468,749	503,343	540,491	580,384	623,223	669,227	718,629
<i>Other liabilities</i>											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
<i>Shareholders' equity</i>											
Paid-up capital	7,807,935	7,807,935	7,807,935	7,807,935	7,807,935	7,807,935	7,807,935	7,807,935	7,807,935	7,807,935	7,807,935
Retained earnings		192,476	2,592,289	6,512,018	11,939,509	18,936,026	25,411,342	40,421,102	44,236,896	48,374,234	52,863,629
Total Equity	7,807,935	8,000,411	10,400,224	14,319,953	19,747,444	26,743,961	33,219,277	48,229,037	52,044,831	56,182,169	60,671,564
TOTAL CAPITAL AND LIABILITIES	7,807,935	8,379,011	10,806,760	14,756,488	20,216,194	27,247,304	33,759,768	48,809,420	52,668,054	56,851,395	61,390,193

12.3. Cash Flow Statement

Calculations	SMEDA										
Cash Flow Statement											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<i>Operating activities</i>											
Net profit		240,595	3,047,885	5,547,733	8,412,369	11,730,524	12,828,151	15,009,760	14,875,018	16,230,896	17,705,303
Add: depreciation expense		950,234	950,234	950,234	950,234	950,234	950,234	647,052	1,482,750	1,482,750	1,482,750
amortization of pre-operating costs		67,484	67,484	67,484	67,484	67,484	-	-	-	-	-
Pre-paid building rent	(125,000)	(12,500)	(13,750)	(15,125)	(16,638)	(18,301)	(20,131)	(22,145)	(24,359)	(26,795)	294,743
Accounts payable		378,600	27,936	29,999	32,214	34,594	37,149	39,892	42,839	46,004	49,402
Other liabilities		-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(125,000)	1,624,413	4,079,789	6,580,325	9,445,663	12,764,533	13,795,401	15,674,559	16,376,249	17,732,855	19,532,199
<i>Financing activities</i>											
Issuance of shares	7,807,935	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares											
Cash provided by / (used for) financing activities	7,807,935	-	-	-	-	-	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(7,182,935)	-	-	-	-	-	-	(9,613,751)	-	-	-
Acquisitions											
Cash (used for) / provided by investing activities	(7,182,935)	-	-	-	-	-	-	(9,613,751)	-	-	-
NET CASH	500,000	1,624,413	4,079,789	6,580,325	9,445,663	12,764,533	13,795,401	6,060,808	16,376,249	17,732,855	19,532,199

13. KEY ASSUMPTIONS

13.1. Operating Cost Assumptions

Table 20: Operating Cost Assumptions

Description	Details
Building/Infrastructure depreciation	10%
Machinery and equipment depreciation	15%
Furniture and fixture depreciation	15%
Vehicle depreciation	15%
Office equipment depreciation	15%
Inflation rate	8.3%
Wage growth rate	7.3%
Electricity price growth rate	8.8%
Office equipment price growth rate	8.0%
Office vehicle price growth rate	10.7%

13.2. Revenue Assumptions

Table 21: Revenue Assumptions

Description	Details
Price growth rate	8.3%
Capacity utilization	60%
Capacity utilization growth rate	10%
Maximum Capacity	100%

13.3. Financial Assumptions

Table 22: Financial Assumptions

Description	Details
Project life (Years)	10
Debt: Equity	0:100
Discount Rate used for NPV (100% Equity)	25%
Discount Rate used for NPV (50:50 Debt: Equity)	18%

13.4. Cash Flow Assumptions**Table 23: Cash Flow Assumptions**

Description	Details
Accounts receivable cycle (in days)	-
Accounts payable cycle (in days)	10

Small and Medium Enterprises Development Authority

HEAD OFFICE

4th Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road, Lahore

Tel: (92 42) 111 111 456, Fax: (92 42) 36304926-7

www.smeda.org.pk, helpdesk@smeda.org.pk

REGIONAL OFFICE PUNJAB	REGIONAL OFFICE SINDH	REGIONAL OFFICE KPK	REGIONAL OFFICE BALOCHISTAN
3 rd Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road Lahore, Tel: (042) 111-111-456 Fax: (042) 36304926-7 helpdesk.punjab@smeda.org.pk	5 TH Floor, Bahria Complex II, M.T. Khan Road, Karachi. Tel: (021) 111-111-456 Fax: (021) 5610572 helpdesk-khi@smeda.org.pk	Ground Floor State Life Building The Mall, Peshawar. Tel: (091) 9213046-47 Fax: (091) 286908 helpdesk-pew@smeda.org.pk	Bungalow No. 15-A Chaman Housing Scheme Airport Road, Quetta. Tel: (081) 831623, 831702 Fax: (081) 831922 helpdesk-qta@smeda.org.pk