



Professional Issues in IT - A

PROJECT-I

(BUSINESS PLAN REPORT)

Project Title:

Gait Tech

Submitted To:

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Chapter 1: Executive Summary

Security has become one of the major concerns in the modern world. In order to establish a secure and safe environment, recognition of a person is essential. Biometric recognition has gained the attention of the public as it can effectively identify individuals on the basis of their physiological or behavioral traits. Conventional physiological biometric techniques like fingerprint recognition, face recognition and iris recognition etc. have various limitations. They demand some sort of cooperation of the subject and it is also easy to deceive these traditional techniques.

In order to provide a solution to all these problems, we are planning to develop a Gait Recognition System named as 'Gait Tech' which will use gait as a biometric trait. Gait is an individual's style of walking. It is a behavioral attribute which is unique to each individual. Psychologically, it has been proven that it is very difficult to hide, change or replicate one's gait. The most distinguishable quality of gait is its unobtrusiveness i.e. it can be captured at a distance without gaining the attention of the subject under observation. So this characteristic can be constructively used to distinguish people from one another.

The military and defense sectors and government organizations will be accounting for almost 40 percent of our target market. Moreover, private multinational firms can also avail the facilities of our company. We will also sell our product to the people related to the medical and sports fields. In addition to this, educational institutions and international organizations will also be a part of our target market.

Gait recognition system would be a new technology introduced for the first time in Pakistan. Most organizations here use fingerprint scanners for biometric recognition. So, our application will surely attract significant attention of the customers.

Our team involves Hamda Naeem (CEO), Abdul Basit (CTO), Bilal Munir (CMO) and Maleeha Qasim (CFO). Hamda has been working with web and android development for a very long time. Basit is good at graphic and UI/UX design and a full stack development. Bilal has sound knowledge in CV and DIP techniques and Maleeha is efficient in matters related to the accounts. So, our team comprises of the right people to take our idea to the market.

Gait Tech will receive soft-loans for its startup as well as investments from friends and family of owners and business angels. This amount will be mainly used for app and website development, advertisement/promotion and its maintenance.

The initial capital required by the company is approximately 11 million, out of which approximately 9 million is needed in the first year which involves the setup cost and all the development cost of both the website and the app. Initially, 7 million will be generated by getting investments from friends and family, and by getting soft-loans. This amount will be enough to run the company for the first year. After one year, the app will be running and generate revenue. This will help us attract investors and business angels to invest in our company. Remaining 4 million will be generated by getting investments from interested sources on 10% equity share per million. The key milestones for this year include updating our databases regularly, developing a prototype model for customer experience and expanding our services to the international market.

Chapter 2: Opportunity

2.1 Problem

Security is an important issue in the modern world. Recognition of a person is an important need for ensuring a secured environment. Due to these reasons, automated human identification is very essential for the detection of threats, critical infrastructure, surveillance and access control. Biometric recognition has captured the attention of the public eye because it can effectively identify people using physiological or behavioral traits. Traditional biometric techniques like iris recognition, facial recognition and fingerprint recognition etc. have various shortcomings. For example, both iris scans and face recognition demand suitably high-quality images. Moreover, these biometric features require some sort of cooperation of the subjects like physical contact etc. So there was a need to develop such a system which could overcome all these issues and provide advanced level security.

2.2 Solution

Our team has proposed an efficient solution to the above-mentioned problem. We have decided to make a desktop application which will recognize a person on the basis of his/her gait. Gait is an individual's manner of walking. It is a behavioral trait. It has been proven psychologically that gait is a characteristic that is unique to every individual. It is not easy for a person to change or replicate one's gait. So this feature can assist in the identification of a person. The most distinguishable quality of gait is its unobtrusiveness i.e. it can be captured at a distance without gaining the attention of the subject under observation.

2.3 Target Market

The target market for our company includes all the organizations in Pakistan that require high security. We can sell our application to banks, government offices, hospitals and other workplaces where it can be used for identification of the employees. This would enhance security by restricting unauthorized access to certain areas or systems.

Market Segments:

1. Military and Defense Sectors and Government Organizations will be accounting for almost 40 percent of the target market.
2. Private multinational firms can avail the facilities of our company to monitor the entrance and exit activities of their employees.

3. We can also sell our software to Educational institutions for the purpose of taking attendance of students. This will be a very profitable approach for meeting the expenses of our company.
4. We can sell our product to hospitals, banks, airports and other areas where high end security is needed.
5. Instead of selling our product locally we can sell it to international organizations which will be a huge step ahead for our company.
6. This application can be sold to people related to the medical field where they can use it to diagnose various neuromuscular disorders in individuals by examining their gait.
7. We can sell this product to people related to the sports field where it can be used to check the performance of the athletes by capturing their gaits.

Following pie graph throws more light on the details of target market division:

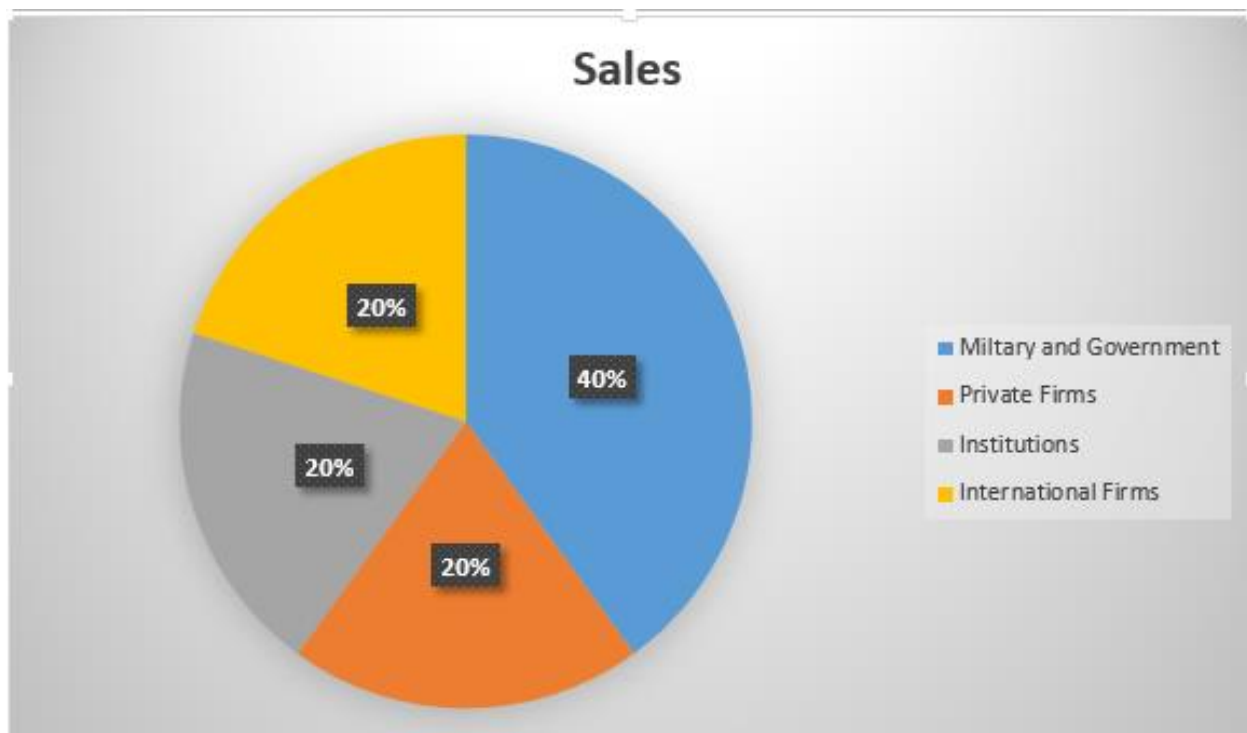


Figure 1: Sales Division

This graph clearly shows that the military and defense sectors and Government Organizations contribute a lot to customer market. Furthermore, we can also see that local institutions and international organizations are also contributing a lot to our targeted market.

2.4 Products and Services

We will provide free trial of 7 days to our customers. This feature would give them experience to see how our application works and familiarity with different modules. Our application can be used in numerous other fields like medicine and sports.

- **Security**

The major target of our company is to use our software to provide security at high security alert areas. Our main focus is to sell our software to institutions that need security and surveillance for protection. It can be used to store the gaits of employees in the database and whenever an individual enters the organization the identity of that individual can be verified by the gait.

- **Medicine**

In the area of medicine, the process of Clinical gait analysis is adopted by which quantitative information is collected to aid in understanding the causes behind gait abnormalities in individuals and in making decision about the suitable treatment. In addition to this, doctors can identify different neuromuscular disorders like Parkinson's disease at an early stage using our app.

- **Sports**

In the discipline of sports, gait recognition method can be used to make the performance of players better and lessen the injury rates by detecting posture or movement related issues.

2.5 Competition

There is no workplace in Pakistan where gait recognition system is used for identification of people. It would be a new technology introduced for the first time in Pakistan. Most organizations here use fingerprint scanners for biometric recognition. So, our application will surely receive significant attention of people as gait has never been used as a biometric trait in Pakistan before. We are hopeful that organizations are highly going to like this advanced mechanics.

2.6 Future Plans

Till now, our main objective was to provide security in banks, offices, hospitals and other workplaces in Pakistan but we are going to expand our business to international market as well. We are also looking forward to the people in Sports and Medical fields to use our product to check performance of athletes and to diagnose neuromuscular disorders in individuals respectively. This will eventually result in an increase in customer traffic and business expansion.

Chapter 3: Execution

3.1 Marketing and Sales Plan

Our marketing efforts will be directed towards executing the company strategies of building awareness and driving traffic to the site. The combination of strong creative marketing and partnerships with traffic generating sites is expected to result in many visitors who will become loyal and repeat customers. The Company expects to use a variety of marketing tools including guerilla or grassroots marketing, Web advertising, public relations, and key strategic alliances to drive traffic. The following will provide an explanation of each of the tools:

- **Grassroots Marketing:** As the technology our company is targeting is an emerging technology so our company believes that it is extremely important to use word-of-mouth marketing campaigns especially in the early phases of site launch. The targeted market of our products is mostly industry specific so our marketing will be industry specific too. We will try to create awareness about our company by visiting different organizations and presenting them how our products can benefit them. Gait Tech will also show customers how our products work in order to gain market.
- **Public Relations:** Gait Tech will try to reach out to each and every contact it has in order to market and advertise its product. As in the case of Gait Tech, it is imperative to promote products in large organizations for which Gait Tech surely need public relations.

3.2 Positioning

Our company will provide such unique platform to meet the needs of customers that are not provided by any other company in Pakistan yet.

“For customers from multinational companies and large organizations who need high end biometric security and surveillance for their firms and corporations, our company will provide them with a system that can monitor and recognize individuals by their gait without letting them notice that they are being monitored. Right now, there is no platform in Pakistan which is providing such security facilities to their customers”

3.3 Pricing

The primary cost that our business will have to bear is:

1. Maintaining servers and database for desktop application and website, and their hosting
2. Salaries of the employees working on this platform.
3. Buying high quality cameras and installing them.

But this would be covered with the revenue generated from our service. The online stores who would be willing to display their ads on our website and application would be charged **\$90** (Rs. 15,205) per month which makes **\$3** (Rs. 417) per day. Per ad click would also generate some money based on some estimated earnings generated by our company and number of ad views.

And the other costs will be compensated by the money we charge for each client. As it is an industry-based company so the revenue generated by each Client would be enough to cover all expenses and gain profit as well.

So, here is what Gait Tech will charge Clients based on the services they need:

1. Military and Defense sectors and Government, International Firms and Multinational Organizations based Clients would need high end security that's why they will be charged the most. They will be charged **\$6,400** (Rs. 10,00,000 approx.) for the system and **\$770** (Rs. 1,20,000 approx.) will be charged each year for the maintenance of the system.
2. The schools, banks, hospitals etc. which would need the security product for surveillance will be charged **\$3,300** (Rs. 5,00,000 approx.). Along with **\$770** (Rs. 1,20,000 approx.) will be charged each year for the maintenance of the system.
3. The medical product needed in the hospitals will cost **\$5,800** (Rs. 9,00,000 approx.) and **\$770** (Rs. 1,20,000 approx.) will be charged each year for maintenance.
4. The sports product will cost **\$5,200** (Rs. 8,00,000 approx.) and the maintenance cost will be **\$770** (Rs. 1,20,000 approx.) per year.

3.4 Promotion

1. The customers who wish to buy Gait Tech will be shown a free demo of the working of the product at our company.

2. We will use strategy of references. People who know and trust us would be asked to promote our product in their respective companies.
3. As we have a range of products which would be targeting different types of Clients. So, Gait Tech would try to set personal meetings with organizations to give them a detailed view of the respective product and convince them to buy it.
4. Promotional plan includes well-written blogs and articles. Once in a month, magazines and newspapers will be used for advertising in the start and this amount will be increased or decreased according to the response.
5. In order to promote Gait Tech, seminars will be conducted to give people a know how of the product.
6. We will try to contact our friends and family members in Military and Government Organizations to contact their superiors to buy our product for security and surveillance purposes. In addition to this, we will ask our family and friends living abroad to promote our product in the international market.

3.5 Operations

3.5.1 Technology

We would be capturing the gait of a walking individual with the help of high-resolution video cameras. We would then take out frames from the captured video. After that, we would be extracting certain features of gait from the frames. These features can be effectively used to distinguish people from one another as these are unique to every individual.

3.5.2 Distribution

We will use direct distribution strategy for our business. The product will be directly sold to the customer without involving any distribution company keeping the process as simple as possible.

3.6 Funding Sources

3.6.1 Friends and Family Funding

In order to start up the business, the business owners will require funds. For initial funding, the required capital will be taken from close family and friends of business owners. This would help us to at least startup business, where 0% of interest is to be returned per lac PKR.

3.6.2 Business Angels and Investors

Since we do require more capital, necessary for the payment of the utilities and getting a good location for the office. Therefore, we need to find more investors for investing money, by buying shares of Gait Tech. This would give them confidence that they are the owners too and will get the percentage of the profit per share, earned annually.

3.6.3 Soft-Loans

Apart from self-funding and getting capital from business Angels or Investors, we can also look up for Soft-Loans. One of the main reasons of getting Soft-Loans, is that their interest rates are lower, and we can pay them back, as soon as our company will start generating revenue.

3.6.4 Initial Capital Plan

The initial capital required by the company is approximately 11 million, out of which approximately 9 million is needed in the first year which involves the setup cost and all the development cost of both the website and the app. Initially, 7 million will be generated by getting investments from friends and family, and by getting soft-loans. This amount will be enough to run the company for the first year. After one year, the app will be running and generate revenue. This will help us attract investors and business angels to invest in our company. Remaining 4 million will be generated by getting investments from interested sources on 10% equity share per million.

3.7 Key Milestones

Our key milestones for this year include the following:

- Updating our databases regularly and train our data.
- Developing a prototype model for customer experience.
- Expanding our services to the international market.

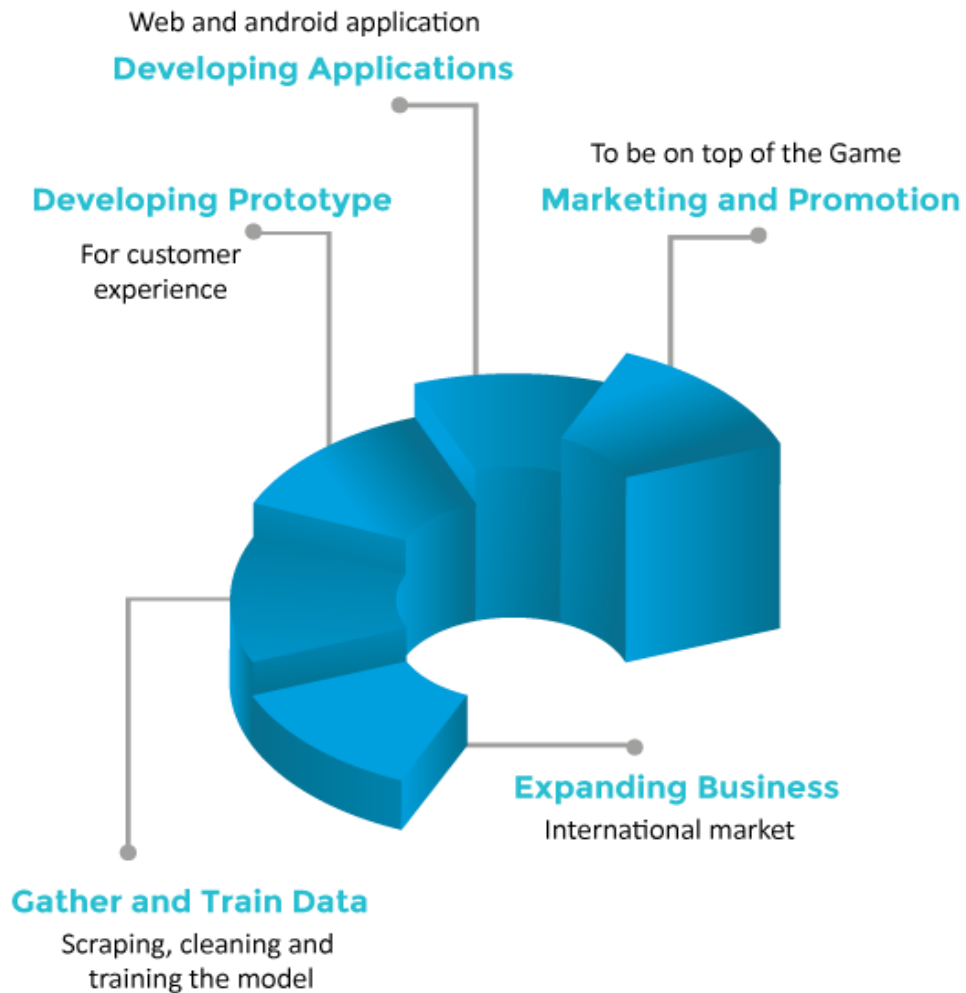


Figure 2: Key Milestones

Chapter 4: Team and Company:

4.1 Mission Statement

Following is Gait Tech's mission statement:

“Providing an advanced level security system to organizations to avoid unauthorized access to certain areas or systems”

4.2 Company's Profile

This section includes the people involved in Gait Tech.

4.2.1 Chief Executive Officer (CEO): Hamda Naeem

Hamda has been working on android apps and front-end development since her junior year at National University of Computer and Emerging Sciences (NUCES-FAST) and has always been good at managing people. Information retrieval is something that she has always been passionate about and is currently helping to update the dataset which is to be collected through web scraping. She plans on pursuing a degree of Masters in Business Administration (MBA) in order to contribute fully in the growth of Gait Tech and to do justice to her post.

4.2.2 Chief Technical Officer (CTO): Abdul Basit

Abdul Basit has been working as a graphic and UI/UX designer, and a full stack developer since his sophomore year at National University of Computer and Emerging Sciences (NUCES-FAST). He has a nick of doing work that is technically perfect. He also worked as an intern last summer and gained the experience how to work with a team that is professional and working for almost 5 years. He is the perfect CTO one can find for Gait Tech because he knows what he is doing and how he is doing. His goal is to present a platform that is easy to use, and a platform that even a layman can use without finding any problem with it.

4.2.3 Chief Marketing Officer (CMO): Bilal Munir

Bilal has sound knowledge in Computer Vision (CV) and Digital Image Processing (DIP) techniques since his sophomore year at National University of Computer and Emerging Sciences (NUCES-FAST). He is good with people and has convincing skills which helps in bringing business. He is determined and persuasive. He is a good candidate for a CMO as he is active on all social media platforms and it is also a part of his job to keep the social media advertising of Gait Tech going. He has attended many workshops regarding marketing and is planning to pursue his higher education in a related field.

4.2.4 Chief Financial Officer (CFO): Maleeha Qasim

Maleeha is currently in her senior year at National University of Computer and Emerging Sciences (NUCES-FAST). She is good with numbers and has already worked as a CFO for a company. She has an eye for any discrepancies present in the cash flow or the statements. Her previous experience

provided her with the required knowledge and understanding that can help her with the complex and sticky situations making her an ideal CFO for Gait Tech.

All the personnel at Gait Tech are dedicated, driven and plan to eliminate the security issues people face at organizations.

4.3 Team Structure

In the beginning, the major tasks will be performed by the development team, developing the desktop application and implementing the various functionalities in the application. Later, the maintenance team and marketing team will always play major roles in keeping the platform accessible and promoting our company respectively. Moreover, the accountant will keep the HR manager updated with the finances of the start-up and each milestone will be supervised by the HR manager. The members and the major tasks assigned to them are given in the table below.

Department	Designation/Post	Person
Development Team	Full Stack Developer	Hamda
	Backend Developer	Abdul Basit
	Backend Developer	Another Employee
	Full Stack Developer	Another Employee
	Android App Developer	Another Employee
Human Resource Team	Human resource manager	Another Employee
Accounts Team	Accountant	Maleeha
Marketing Team	Marketing Manager	Bilal
Maintenance Team	Web App Maintenance	Another Employee
	Android App Maintenance	Another Employee

Table 1: Team Structure

Chapter 5: Financial Plan



Figure 3: Revenue of Year

Calculations:

- **Revenue Generated**

Formula for Product revenue= (No. of orders by companies in Category * price of each order) + (.....

Category 1: Government organizations, Military Sectors, Multinational firms, International Corporations

Category 2: Institutions like hospitals, schools, banks, universities etc.

Category 3: Medical

Category 4: Sports

$$\text{Sept} = (0 * \$6400) + (1 * \$3300) + (1 * \$5800) + (0 * \$5200) = \$9100$$

$$\mathbf{Oct}=(0*\$6400)+(2*\$3300)+(1*\$5800)+(0*\$5200)=\$12,400$$

$$\mathbf{Nov}=(0*\$6400)+(2*\$3300)+(2*\$5800)+(1*\$5200)=\$23,400$$

$$\mathbf{Dec}=(0*\$6400)+(4*\$3300)+(3*\$5800)+(3*\$5200)=\$46,200$$

$$\mathbf{Jan}=(0*\$6400)+(10*\$3300)+(5*\$5800)+(5*\$5200)=\$88,000$$

$$\mathbf{Feb}=(0*\$6400)+(11*\$3300)+(6*\$5800)+(7*\$5200)=\$107,500$$

$$\mathbf{Mar}=(0*\$6400)+(12*\$3300)+(7*\$5800)+(7*\$5200)=\$116,600$$

$$\mathbf{Apr}=(0*\$6400)+(15*\$3300)+(9*\$5800)+(8*\$5200)=\$143,300$$

$$\mathbf{May}=(1*\$6400)+(18*\$3300)+(10*\$5800)+(10*\$5200)=\$175,800$$

$$\mathbf{June}=(2*\$6400)+(20*\$3300)+(12*\$5800)+(13*\$5200)=\$216,000$$

$$\mathbf{July}=(4*\$6400)+(25*\$3300)+(12*\$5800)+(12*\$5200)=\$240,100$$

$$\mathbf{Aug}=(4*\$6400)+(25*\$3300)+(13*\$5800)+(12*\$5200)=\$245,900$$

$$\mathbf{Sept}=(4*\$6400)+(30*\$3300)+(14*\$5800)+(12*\$5200)=\$268,200$$

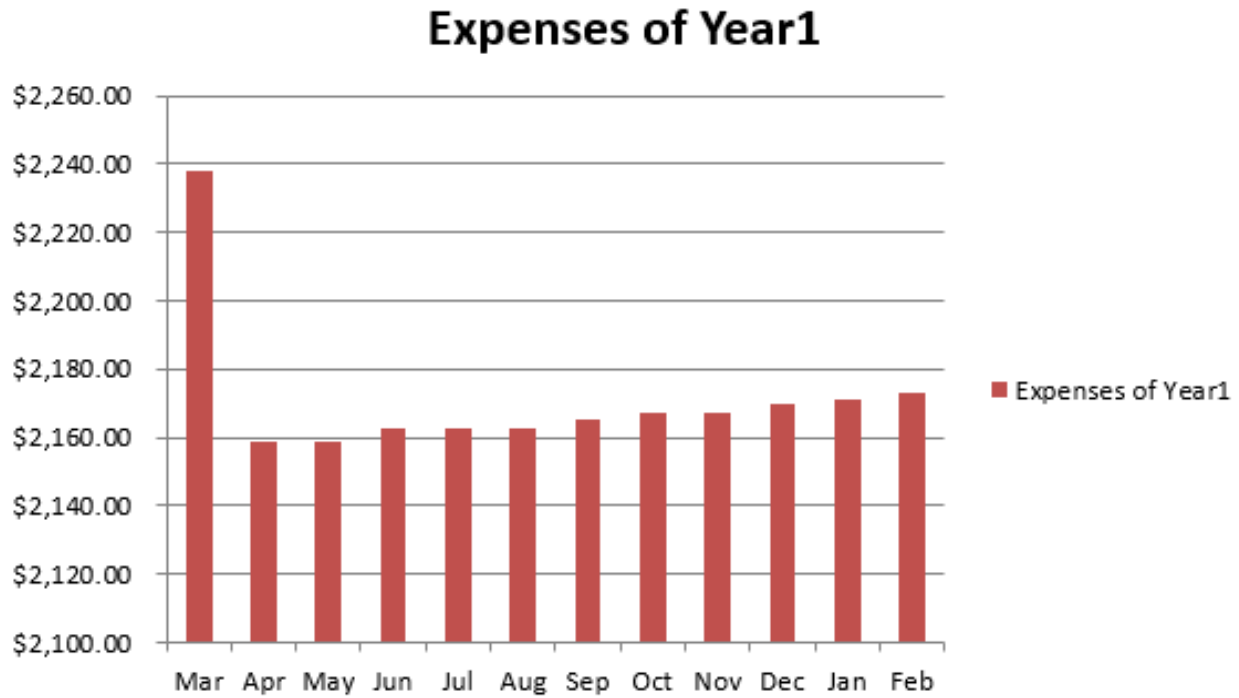


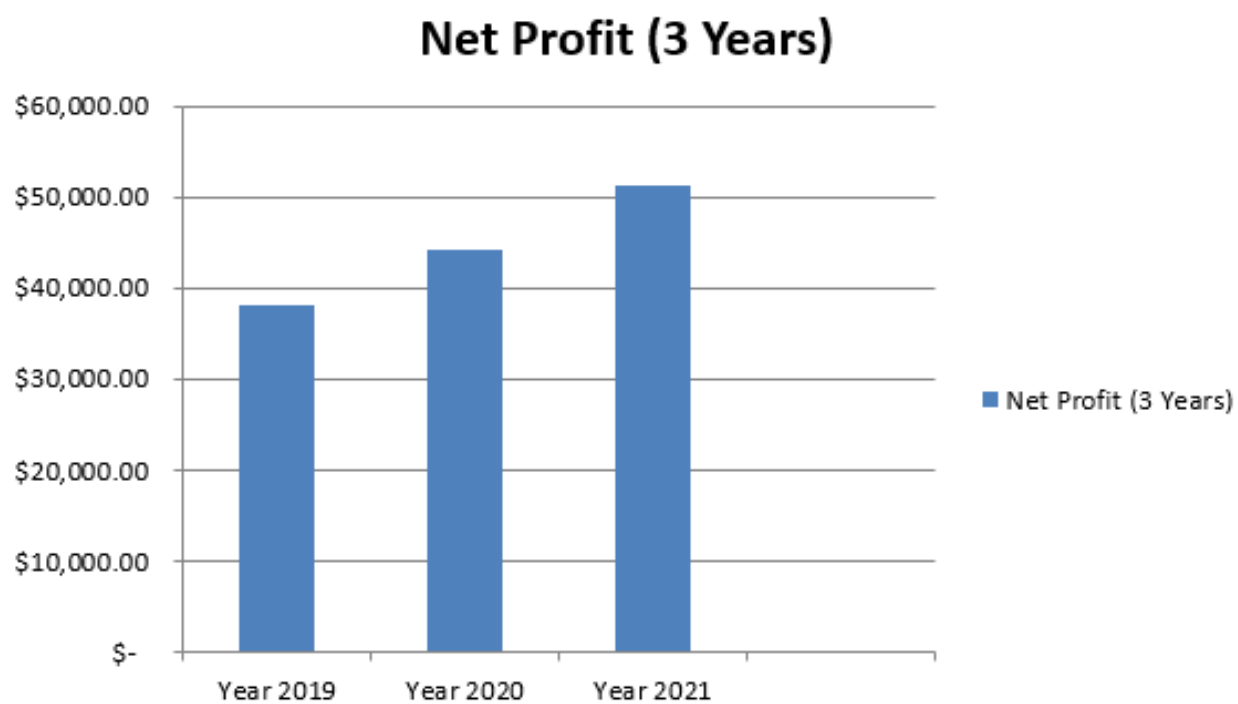
Figure 4: Expenses of Year 1

Mar = $6 \text{ developers} \times 40000 \text{ Rs} + \text{servers cost initial of } 11,000 + \text{office rent including office expenses of } 60,000 = 311000 = \2238

Apr = $6 \times 40000 + 60,000 = 300000 = \2159

Same for the rest of the years but with variation of office expenses.

Figure 4: Net profit of 3 years



2019 = $64250 - 26058 = \$38,192$

\$6,000 added in rest of 2 years roughly

5.1 Cash Flow Statement

This section involves the details of how the cash will flow in and out of the company. The detailed design is shared in separate excel file, for the ease of computation of profits and losses.

Assumptions:

Our cash flow is based on following assumptions.

- Office Setup cost will increase due to the increase in the staff
- Rent is increased 20% after two years
- Utilities and Bills are increased 20% every year
- Advertisement Cost will decrease annually because our product is already launched and does not require same promotions
- Average salary is 40,000 per month and staff is increasing as per growth in the business on a yearly basis.

Discount Factor: $1 / (1+0.1)^Y$, where Y is year passed

NPV: Discount Factor * money

CNPV: CNPV (last year) + NPV (current year)

Chapter 6: Visit to Plan9 - PITB's Tech Incubator

Our team visited Plan9 to pitch our business idea and to get guidance about it. We had a meeting with **Mr. Sarmad Hafeez** during which we had a detailed discussion about the proposed plan.

6.1 Comments about the Feasibility of Idea:

During the meeting, we presented the idea to Mr. Sarmad. He said that it is implementable. He critically evaluated our business scheme and concluded that it is worth investing our time and money.

6.2 Changes/Improvements Suggested to the Idea:

Mr. Sarmad Hafeez advised us to do a preliminary research on the market. Further, he told us to have a little refinement in revenue generation.

6.3 Good Aspects Appreciated about the Idea:

Mr. Sarmad Hafeez appreciated the uniqueness of our idea. Moreover, he informed us that our market size is quite big which is a plus point and we are heading in the right direction to meet the needs of customers since security has become a major concern in today's world.

6.4 Any other Advice about the Business Plan and Execution

He advised us to participate in Launchpad of 2019 and pitch our idea there.

6.5 Email of the Person Providing Feedback

Email ID: sarmad.hafeez@pitb.gov.pk

Phone Number: 0332-8921248

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