Tryon-Augmented Reality Fitting Room Business Plan

By

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In

NUST Business School

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BUSINESS PROJECT ACCEPTANCE CERTIFICATE

It is Certified that final copy of EMBA Business Project written by Izhar Ul Haq Registration No 364416 of EMBA 2K21 has been vetted by undersigned, found complete in all aspects as per NUST Statutes/Regulations/MS Policy, is free of errors, and mistakes and is accepted as fulfillment for award of EMBA degree. It is further certified that necessary amendments as pointed out by GEC members of the scholar have also been incorporated in the said business project.

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EXECUTIVE SUMMARY

Try On is a virtual reality startup that aims to modernize the textile retail sector of Pakistan through its state-of-the-art virtual fitting room (VFR). This product will detect a human body using Kinect sensors and then, in real-time, will place 3D images of clothes – stitched and unstitched - on the individual standing in front. Tryon product involves hardware as well as software. The complete architecture and technical details of the product are included in this document for better understanding of readers. Hardware and software tools involved are explained in detail. Retail industry of Pakistan is burgeoning, however technologically it still has a lot to achieve. Our VFR is an idea embedded in consumer needs. Consumers today are faced with a plethora of options while being tied for time. In such scenario our VFR will aid them in decision making and save the hassle of trying clothes on pre-purchase. Accuracy in sizes will help our customers save money by eliminating the need for returns and associated costs. They will achieve consumer loyalty and have access to consumer data for business intelligence purposes. Pakistan's textile market is huge with the lawn industry itself being worth 20 billion atleast. 245 lawn brands launched their collections in summer 2016 alone. This shows the potential for TryOn. All major retailers have around 10-15 branches across Pakistan which all will serve as the targeted customers of TryOn. No local competition exists for TryOn as virtual mirrors have not been adopted by any apparel retailers of Pakistan. Globally however competition stems from brands such as Zugara, MemoMi etc. Even then, our competitive edge arises from our first of its kind mirror that caters to unstitched fabric category consumers as well. TryOn will earn its revenue through two streams - firstly sale of its device and installation followed by up gradation of devices with 3D designs as new textile retailer collections come forward. This business plan also contains the five years financial projections including the cost that will incur throughout the operations including salaries of employees and the cost of manufacturing and developing the complete system. Our startup will function according to the lean business model. Therefore, constant consumer feedback will be sought until the product is perfected. A direct selling strategy will be pursued by a sales team to liaison with possible clients and sell the VFR. Free trials will also be allowed in the beginning.

1 INTRODUCTION

1.1 PROBLEM STATEMENT

"In the peak hours like weekends shops are crowded with people, due to which it takes much time for customer to try on cloths they want, ultimately leading to dissatisfaction. Moreover, a common hurdle while shopping is deciding how unstitched fabrics will look on them."

Figure 1: Problem

Shopping is the most popular activity around the world in which maximum people hang around for window shopping. Thus, changing rooms are often crowded with people and customer keeps on waiting for their turn. Moreover, people changing cloths physically take much time which also give tough time to the seller to wrap the cloth again and again.

1.2 SOLUTION

The idea behind this project was taken from products currently in use in different advanced countries. The increasing number of clothing brands and fashion industry motivated us to work on such project, to cater the problems that occurs in the mostly done activity throughout the world i.e Shopping.

TryOn is a product that will boost up sales of fashion brands by helping their customers try unstitched fabric and other clothing apparel on screen there by making their purchase decision much easier. To change the life style of shopping we are hitting it by technology. Customers don't need to waste their time on shopping anymore, they just have to swipe, fit, and pick the dress they want to buy.

TryOn is an Augmented Reality Dressing Room which will assist customers inside clothing shops to try on different clothes on their body without having to actually change in the dressing room. Customers can select which clothes to try on their body by just standing in front of a screen. The cloth will appear on the body as the customer is really wearing it through augmented reality.

Figure 2: Solution

The product is for every kind of dresses, whether they are ready mate means stitched or unstitched clothes. The benefit that our product is providing to the customers is saving their time. Customers won't have to make those hectic trips back and forth to the try room just to see if a particular dress will look good on them or not. Another great benefit of our product is that it will certainly boost up the sails of famous fashion stores

Mainly there are two users of the product. One is the retail brand in which it will be deployed and the second user is the customer of the retail brand. For the retail brand, they will have to use it for updating the designs of dresses and the new textures of the dresses which will change seasonally. While customers will use it for shopping and trying maximum number of clothes in less time.

The product consists of some dept data sensors used for tracking the human body and then mapping the 3D models of cloths on it in Unity Game engine. The hardware parts consist of Kinect sensor, LCD Screen and HD camera. While the software part consists of Unity, 3D Maya,

Marvelous designer, CrazyBump. The functionality of them is explained in the coming parts of this document.

2 OBJECTIVES AND GOALS

In line with the mission and vision, TryOn's progress will be based on certain objectives and goals to ensure strategic fit. Our aim is to focus on internally generated growth while the startup is in its nascent stage. We want to develop the augmented reality industry of Pakistan and thereby provide innovative solutions to facilitate the end consumer and thereby allow our customers to develop a promising relationship with their customers. Establishing a corporate identity will be monumental in achieving our vision and mission. From technical point of view following are our objectives and goals we want to achieve:

Objective 1 – Our main objective is to make the product more realistic, to make the user experience satisfactory.

- To make the 3D models of clothes more genuine and real
- Perfectly fitting the dress on human body
- Wrapping the dress around the human body for real effect
- Making it more user friendly

Objective 2 - The first year will see us working towards attaining at least five different textile retail customers, a 5-10% market penetration, out of the primary market which has been identified through the market research.

- To provide this we will ensure procurement of required hardware, software assembly and efficient deployment of the virtual fitting room.
- Marketing strategy will include activities by the sales team, free trials and discounts to the retailers.
- Since we will be a lean startup the first year will be critical in determining the outlook for our product so one of the primary initiatives will be incorporation of customer feedback.
- Pertinent team building activities will also be conducted to maintain the core values of entrepreneurial innovation and teamwork.

- Hiring the required number of individuals – 3D designers and technicians.

Objective 3 – Ensure assembly of the hardware and software programming in a quality-controlled environment, with minimal defects, to develop strong bonds with our customers.

- Strong relationships will be developed with the suppliers to ensure timely arrival of high quality hardware and reduction in product risk.
- Renting of the office location and arrangement of a transport team will also be an initiative under this objective.
- An optimal assembly time and rigorous testing approach will be adopted to avoid glitches and customer complaints.
- A designer will be made responsible for a particular brand who will maintain the database with seasonal collections and establish communication with assigned technicians.

Objective 4 – Deploy at least 15 virtual fitting rooms' by the end of year 2.

- Ensure enforcement of the marketing policy of direct sales coupled with participation in exhibitions and textile conferences.
- Leverage contacts with the outlets already featuring our technology to expand to their branches all over Pakistan who will utilize the existing databases.

3 STRATEGY

TryOn's strategy is an amalgamation of introducing augmented reality technology in Pakistan and establishing itself as a leading organization in the field. The virtual fitting room produced by our team will revolutionize the textile and apparel industry. Consequently, our vision and mission statements are as follows:

VISION: Making virtual a reality.

MISSION: To facilitate the lives of our customers with a technological touch by providing innovative solutions.

The vision and mission statements serve as the preamble for the goals, objectives and initiatives any organization adopts. As dictated by the strategic management process, the mission directly leads to the objectives which when posited with a stringent external and internal analysis leads to the strategic choice from where your competitive advantage emerges.

According to most literature the vision comprises of two components – a core ideology and an envisioned future. For TryOn, the core ideology characterizes the core values of innovation and a revolutionized way in which customers do the ordinary. Teamwork and integrity and respect will also be strong pillars of the core ideology. The core purpose is an improvement in the overall state of life. Our vision of making virtual a reality defines the end goal of ensuring that the virtual reality products happen and bring the change they were intended to bring. The mission statement consequently is an expression of how exactly this will happen.

4 LITERATURE REVIEW

An augmented fitting room is an equivalent of in-store dressing room. Augmented reality is emerging rapidly in fashion and retail industry. Not only in clothing but it is also putting steps in eyewear, cosmetics and footwear industry. Augmented and Virtual reality are part of consumer-facing technology, this implies that there are technologies and devices that the consumer interacts with and directly experiences whilst being either in the physical store or browsing the online store. Examples of AR are Magic Mirrors or Smart Mirrors, and filters that can be imposed on a setting or person via a mobile app. A key commonality of AR technologies is that computer-generated content is superimposed on the real-world, thereby providing a composite view. Technology has had a significant impact on our daily lives; not only in the way that we communicate, but also in the way that we interact and shop, as technological innovations, including AR and VR, have the ability to change traditional shopping patterns and customers' attitudes towards purchasing fashion outfits. The complete phenomena of trying clothes virtually on a screen is fascinating, it is also very useful for retail industry and for end consumers. It enables shoppers to try on clothes virtually instead of physically. A lot of research is being carried out in this domain specially to facilitate and revolutionize the retail industry. A fit technology can be categorized as per the problem it resolves (dressing room theft/congestion) or by the technological approach. There are various types of technological approaches chief of which is; real-time 3D simulation fitting room for customers with body scanners, size recommendation services, photo-accurate virtual dressing room, dress-up models or mannequins and, real models augmented reality (AR). The fit technology acts as a powerful decision tool for both in-store and online shoppers and also ads a fun factor to the entire shopping experience. Using depth scanning techniques, virtual fitting rooms can make 3D models of users helping them to filter out non-fitting garments and accessories. Not only this, the multiple social networking features allow sharing of photos and videos others to seek feedback along with creating a buzz marketing effect. The quality of 3D model scanners developed by current virtual fitting rooms is amazingly good and is helping retailers to boost sales, along with minimizing apparel damage, theft and sales returns due to improper fit (**Patrick Johnson**, 2021).

5 METHODOLOGY

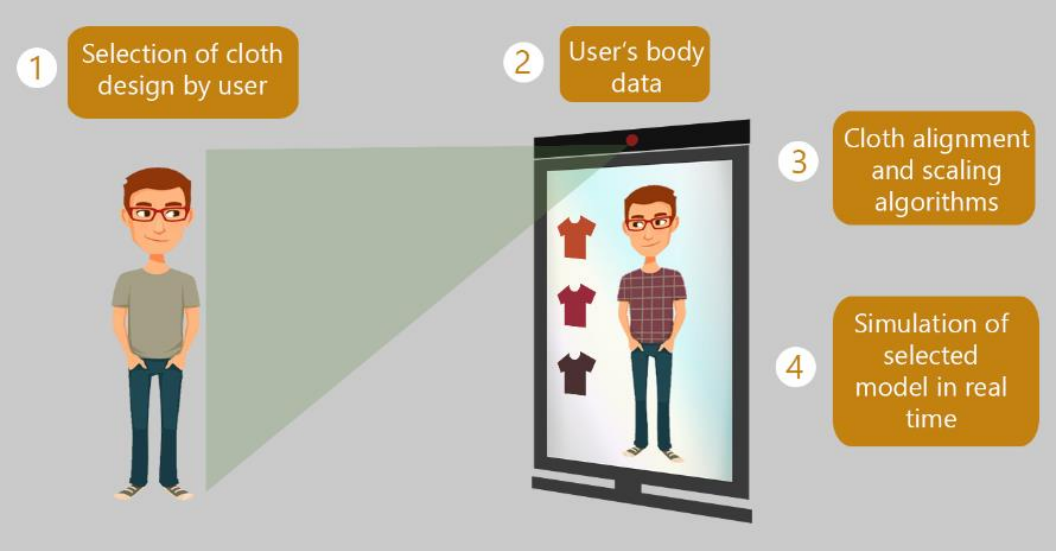
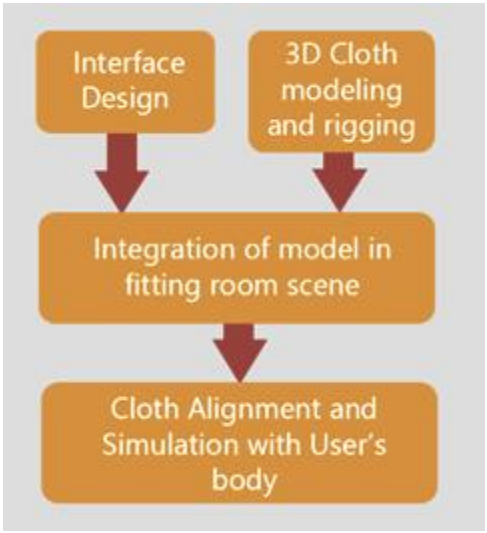


Figure 3: How it works

5.1 Methods and Approach

The basic concept behind this technology is tracking the human body which can be done through various sensor devices. We are using depth sensor device i.e Kinect for tracking the human body. After tracking the human body, we track the skeleton of the human body and the joints of different points of it. Kinect provide us 24 joints from all over the human body and the length between each joint and the movements of human body parts are measured accordingly. By using this information, we map the 3D models of cloth on the human body.

The image explains the basic methods that drive our product, which includes.



5.2 Interface Design

Interface is an important part of this project as the control of the system is through hand gestures so user must be very careful when attracting with the system. We tested the interface on different users of different background so that we can have the idea of how it will be easily used by everyone and then improved by making various prototypes. During testing phase, users were facing difficulty while interacting with our system using hand gestures. So, to cater that problem we made different interactions on Axure RP and tested them with users. Users were more willing for an instruction panel at the start so that they know what to do.

The low fidelity prototypes of our system are given below

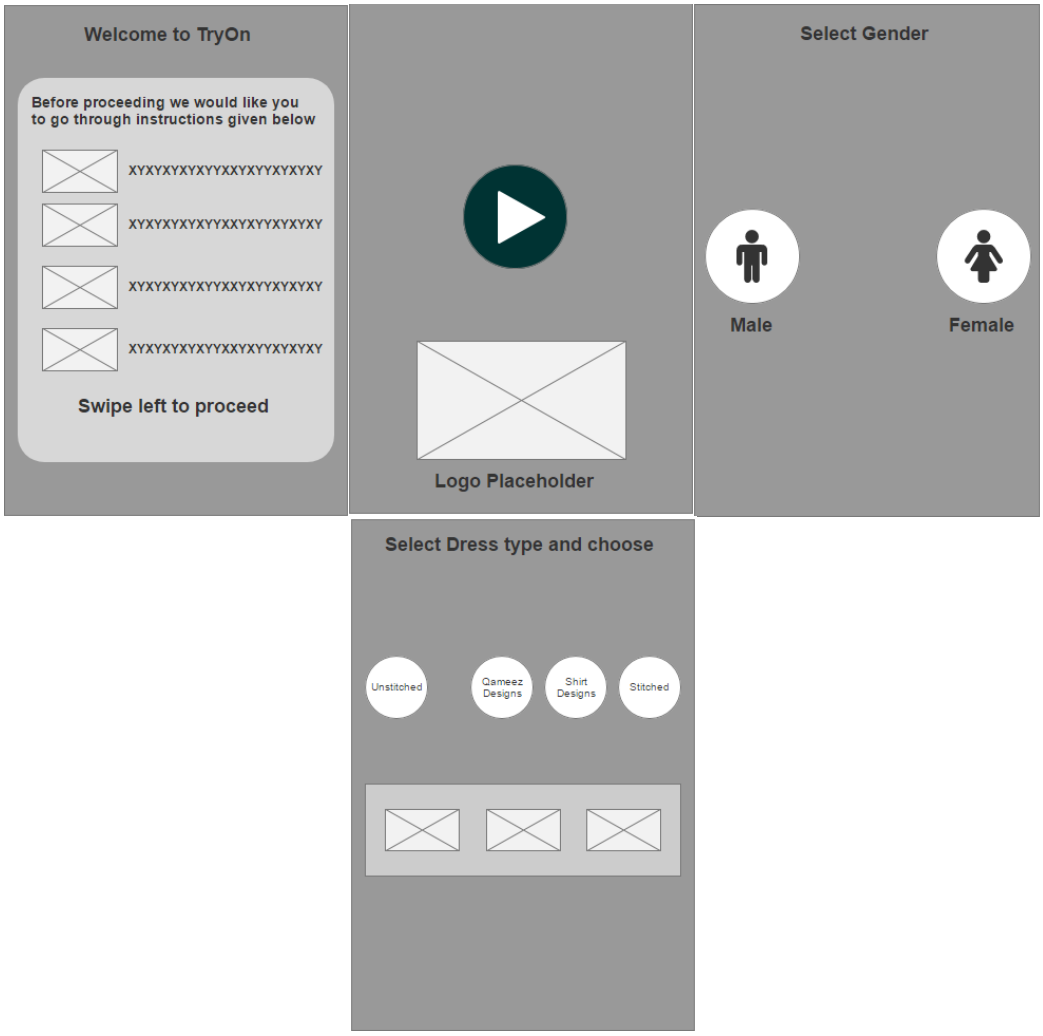


Figure 4: Axure Prototypes

After making interactive low fidelity, these were then converted to high fidelity prototypes using Adobe Illustrator as shown in *Figure 5: Illustrator Prototypes*

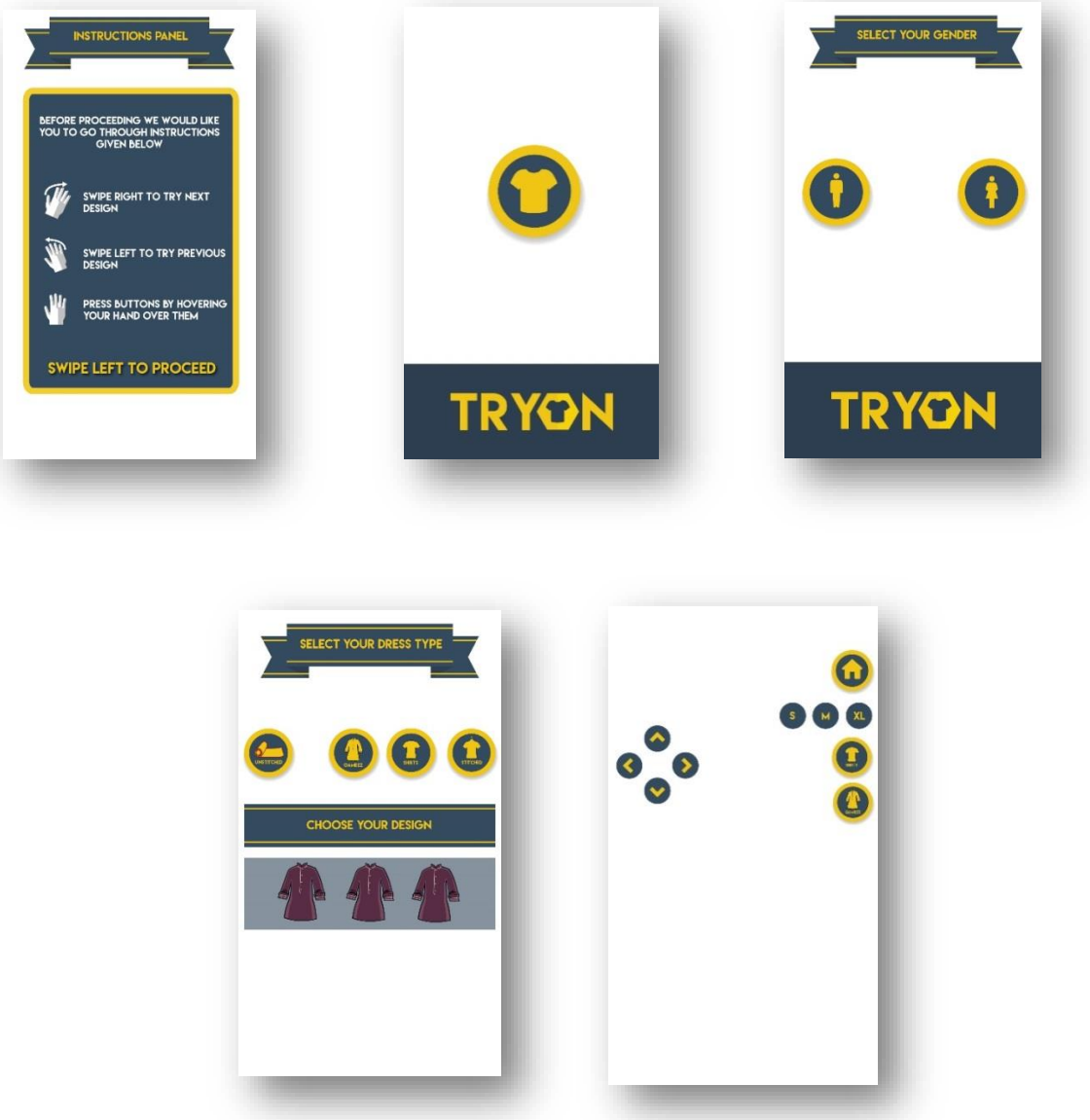


Figure 5: Illustrator Prototypes

5.3 3D Cloth Modeling and Rigging

3D cloth models are designed in the Marvelous Designer and are rigged on human avatar inside 3D Maya so that it can have the same movement aligned with the human body in augmented reality.

5.4 Integration of Models in The Fitting Room Scene

Everything is integrated in Unity. The flow of the system, its interface and 3D models are fed in it. Images of the 3D models are integrated in the scene which are linked with their respective models. As we have different dresses for male and female, a proper hierarchy is maintained for the product.

5.5 Cloth Alignment and Simulation with User's body

In the end, we have alignment and simulation of the 3D cloth model with the human body. The cloth model is mapped on the human body in the video feed, and for giving it a real touch cloth simulation is done so that the cloth model can move like a real cloth with the human body.

5.6 TOOLS AND TECHNIQUES

Tools we are using for the product are divided into two parts

5.6.1 Hardware

Figure 6: Hardware Equipment

Kinect V2	LCD Screen	HD Camera	Laptop	Tablet
				

5.6.2 Software

Unity

Unity is the main software in which all the integration is done. The whole system is made in unity and it's a software application for computers. Following are the tasks that are done in unity:

- Interface Design
- Video Feed and Depth Data from Kinect
- 3D Models Alignment and Simulation.
- Connection with android app of the desktop application

Kinect MS SDK (Library)

The SDK provides the tools and APIs, both native and managed, that you need to develop Kinect-enabled applications for Microsoft Windows. Developing Kinect-enabled applications is essentially the same as developing other Windows applications, except that the Kinect SDK provides support for the features of the Kinect, including color images, depth images, audio input, and skeletal data.

This SDK Includes:

- Drivers and technical documentation for implementing Kinect-enabled applications using a Kinect for Windows sensor.
- Reference APIs and documentation for programming in managed and unmanaged code. The APIs deliver multiple media streams with minimal software latency across various video, CPU, and device variables.
- Samples that demonstrate good practices for using a Kinect sensor.
- Example code that breaks down the samples into user tasks.

Marvelous Designer

Marvelous designer is used to create 3D models of dresses. Most of the games costumes are designed in it. This technology is based on the art of sewing and patternmaking which is the only way to realistically express garments.

3D Maya

All the dresses designed in Marvelous designer are then imported to 3D maya. It's the platform where you can give life to a 3D model by allotting the movement through its rigging on a human avatar.

Crazy Bump

Crazybump software is used for normal mapping to give the dress more realistic and 3D view in the environment. Adjustments are made to the textures applied on the UV maps of the 3D models like occlusion, displacement, specular and normal maps of the textures.

Photoshop

Photoshop in our system played an important role in allotting the textures to the dresses. UV maps exported from 3D maya were imported in photoshop and textures of real clothes were applied on them. Different designs of dresses are created from a single model by applying different textures on it.

Axure RP

Axure RP was used for creating wireframes and interactive low fidelity prototypes of our system.

Adobe Illustrator

Adobe Illustrator was used to convert low fidelity prototypes into high fidelity prototypes.

Photon Unity Network

Photon Unity Network is a real-time multiplayer game development framework that is fast, lean and flexible. Photon consists of a server and multiple client SDKs for major platforms. This plugin is used in our system in order to stream the interface displayed on the screen, on a tablet for the ease of use of non-technical users. The user can use the tablet to interact with the interface instead of the gestures and Photon Unity Network will stream the data back and forth on the connection[i].

MySQL

In order to store the data of the dresses and suits which were tried on most by customers, we are using a MySQL database. It will store against each dress object, the time for which it was used by users on the system.

Chart.js

Chart.js is a JavaScript library for converting data into interactive charts. It is using the data stored in the database to generate visually appealing and efficient graphs and charts which are used to demonstrate the statistics of popular dresses to the retailer.

5.7 ALGORITHM

The algorithm we used to generate the core part of our system i.e the final look with the fitted and aligned dress is illustrated in *Figure 7: General Algorithm*

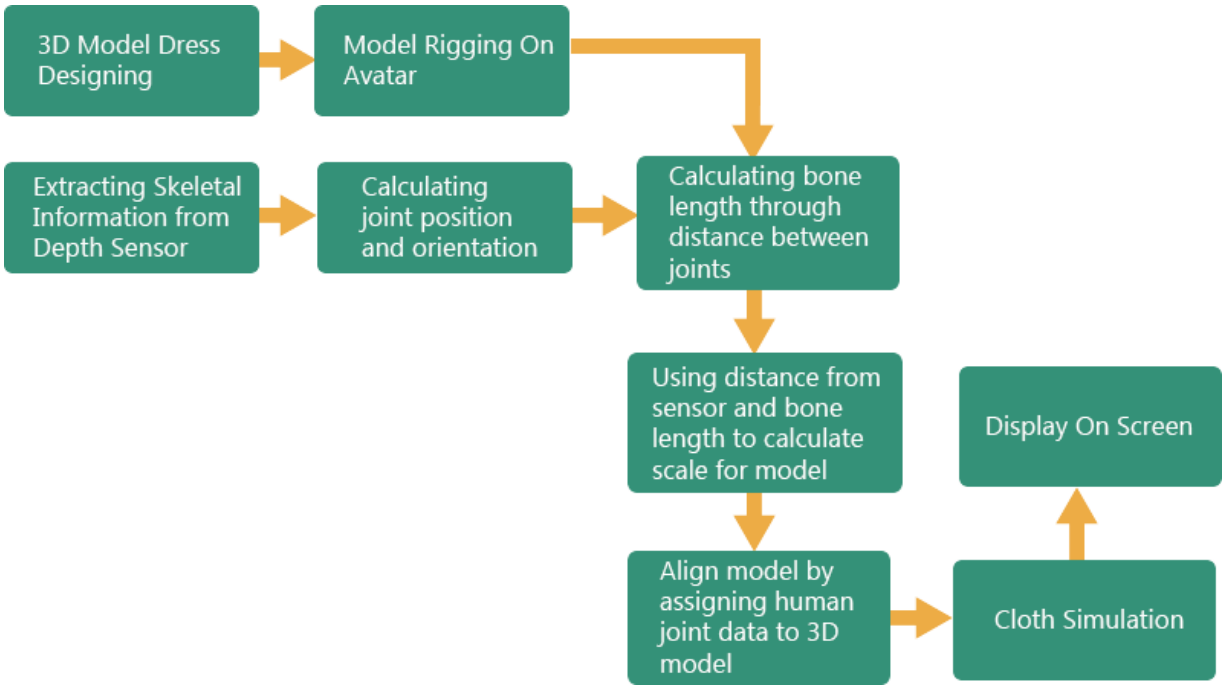


Figure 7: General Algorithm

5.8 DETAILED DESIGN AND ARCHITECTURE

5.8.1 SYSTEM ARCHIECTURE

The system has been divided into two parts: the customer, who will be using our product and the retailers, who will be buying our product. For both of them there are certain functionalities according to their nature of use.

For Customers

- Select their gender
- Select their size
- Select one of the generic dress models to wear
- Select the texture of unstitched cloths
- Change the patterns on swap

For Retailers

- Change the 3D models of cloths
- Update the textures of unstitched fabrics
- Maintain the records
- View Statistics of popular dresses amongst the customers

The diagram as cited in *Figure 8*: Use Case Diagram refers to interaction of the system with actors like retailers and customers.

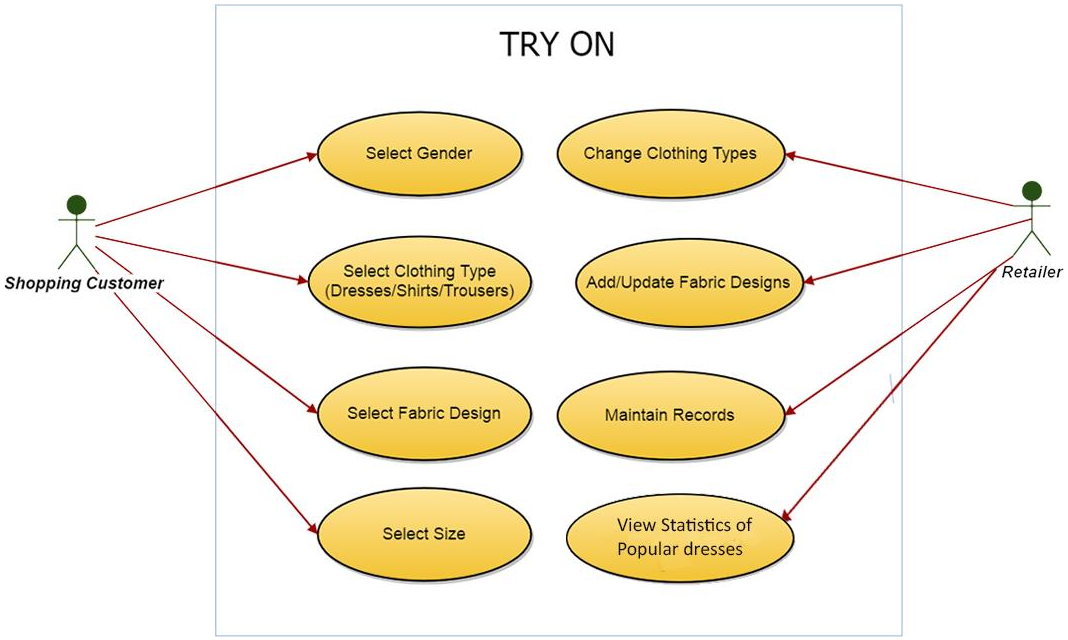


Figure 8: Use Case Diagram

5.9 Product Functions

The main processes involved in the functionality of the system include

5.9.1 Customer Perspective

Selecting genders

When the system starts, it asks the question of selecting the gender of the customer. After selecting the appropriate gender the system will move to the next screen. If the customer is a male, the system will display items of males, like 3D models of cloth for men and the unstitched fabric textures of male clothes. And if the customers select female, the system will display items related to women.

Selecting size

Customer has the option to select the size of the dress which perfectly suits them. If small, medium or large fit on them. Three options will be put in front of them, after selecting the appropriate size, the 3D models of the cloths in that size will appear to the customer in which he/she will select the design they want to try.

Selecting the cloth model

After selecting the size, next option will be of selecting the desired 3D model of cloth which they want to try. Some generic cloth models in white will be displayed to them and the customer will choose one of them on which he/she will change the texture they want to buy

Selecting the fabric design of unstitched cloths

After selecting the dress model the next step will be of selecting the desired texture from the list of textures that the shop will contain. Customers can change the textures on 3D dress model by swiping left or right.

5.9.2 Retailer Perspective

Change 3D models of cloths

Retailers will be provided with the option so that they can change or update the 3D dress models for men and women, in order to keep pace with the latest fashions.

Update the textures of unstitched fabrics

As the fabrics design keeps on changing in a brand, the retailers will have the option to update the list of all the fabric design in the form images in a user-friendly manner.

Maintain records

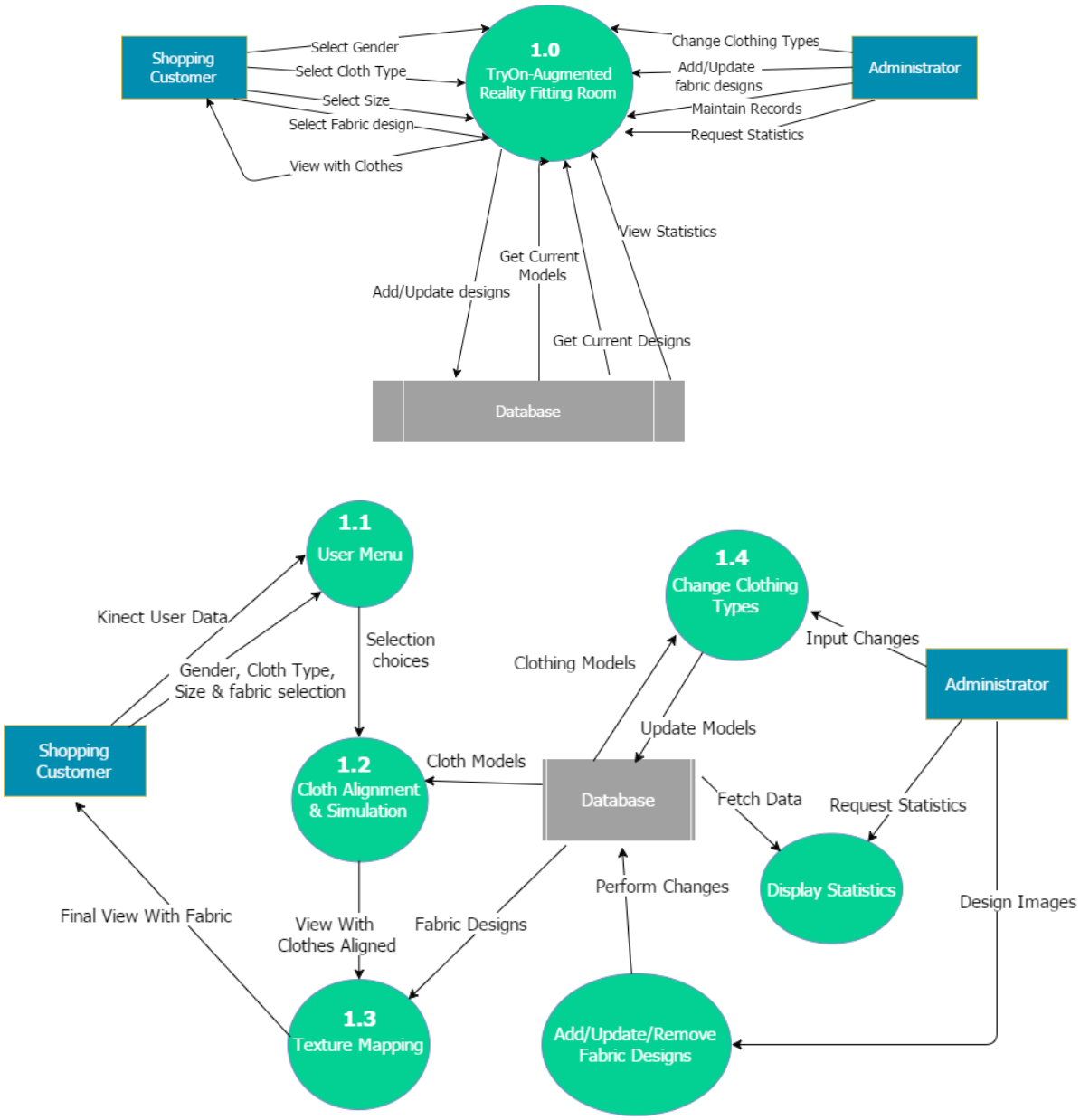
The record of updating the texture design and the 3D model should be maintained properly in the database in order to keep a track of their cloths design and database.

View statistics of popular dresses amongst the customers

One of the benefit of our system is that it shows the retailer which dress is going popular amongst the customers and most viewed. The stats of every dressed will be recorded at the backend.

5.10 Architecture Design

The following Data Flow Diagram shows the different processes in circles and the input and outputs as a result of the processes in the system.



A high-level overview of the modules that constitute the system is illustrated in the figure below.

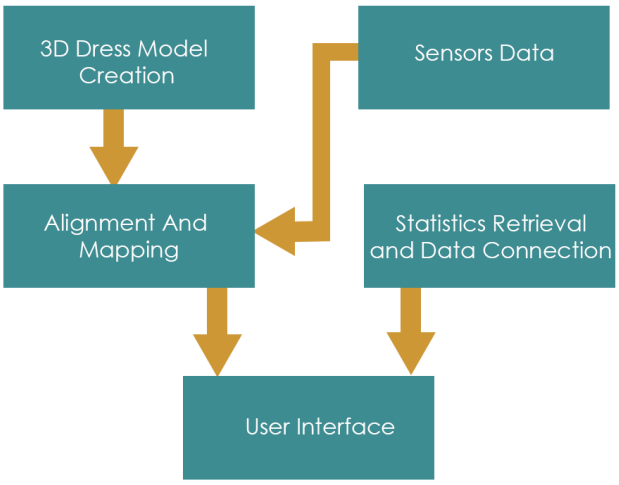


Figure 9: High Level Components

5.11 Subsystem Architecture

The Subsystem architecture is described in the component diagram in *Figure 10*: Component Diagram.

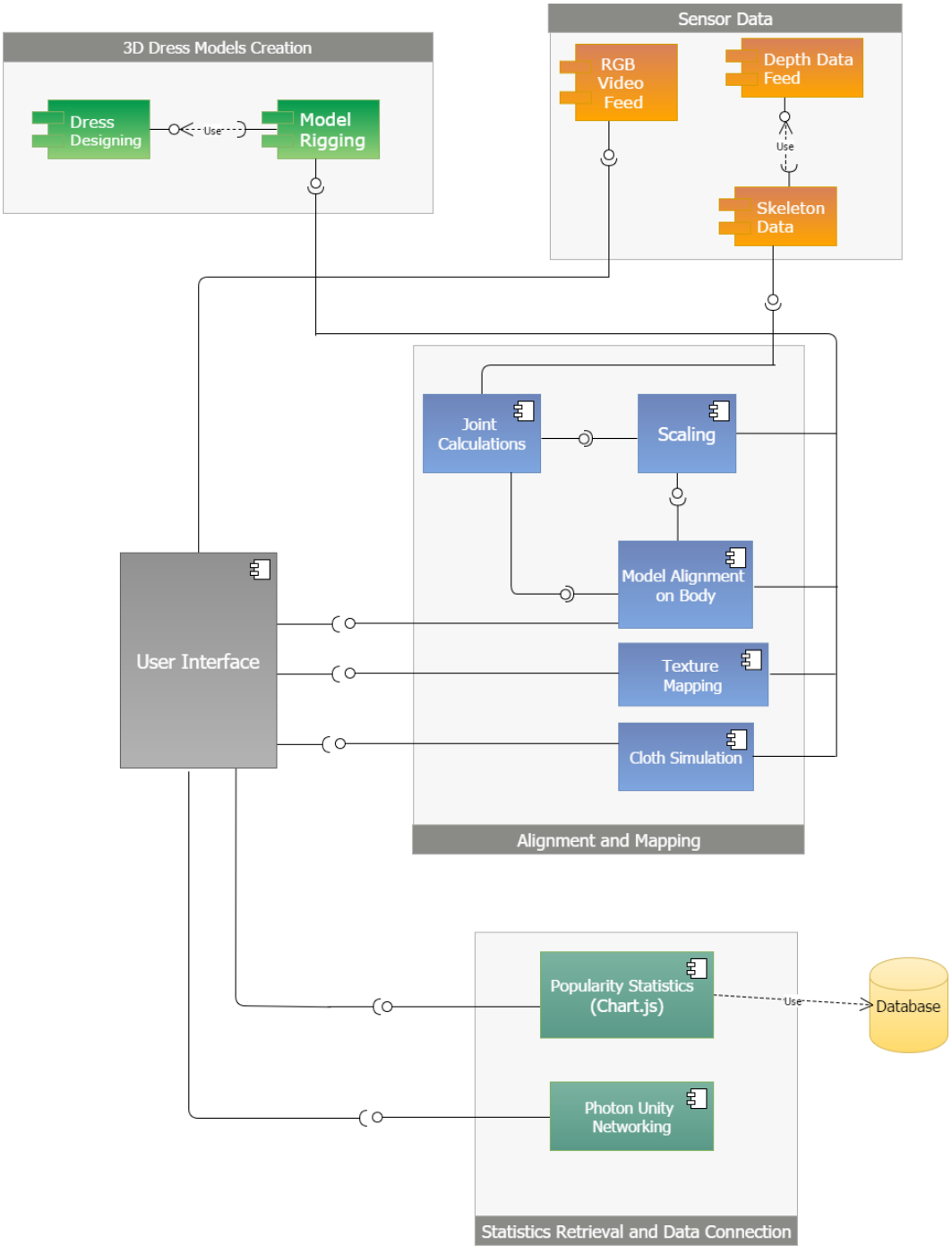


Figure 10: Component Diagram

6 BUSINESS PLAN

TryOn is a startup that aims to be among the focal players in the augmented reality and software industry of Pakistan. Our introductory product is a virtual fitting room (VFR) - locally a one of its kind technology - that holds enormous potential. The company intends to use the technology to improve the textile retail sector of the country. Using our technology we will allow retailers to exhibit their clothes on the virtual mirror and hence ease the decision making process for consumers, who will be able to observe how a certain piece of clothing will look on them, along with a host of other benefits which are discussed further in this business plan.

This is the first ever VFR made in Pakistan; a product widely used worldwide but has not yet made it to Pakistan. VFR is a step in the right direction in order to keep up with the latest technology and to bridge the gap in retail to make this product available to Pakistani consumers as well. A virtual fitting room simulates the process of trying on clothes. By standing in front of a screen that has different options of clothes already fed into the system you can play dress up to see which combination suits you the best. It can show your perfect size eventually resulting in the purchase of clothes.

In addition to the product, we also offer software and hardware installment, maintenance and up gradation services. We will be operating solely in the B2B category with our first range of products.

Our state of the art technology equips us with the first mover's advantage in the retail category. The textile industry of Pakistan is on an upward trajectory with ever increasing sales, influx of lawn designers, price wars and hence an increasing consumer base. In such conditions our product will equip select retailers to gain an edge over their competitors. We promise to revitalize the apparel retail scenario of the country and bring it at par with progressive counterparts globally.

7 NEED ANALYSIS

The retail industry of Pakistan still has a long way to go and has a huge potential to flourish and improve itself. The women of Pakistan are very conscious when it comes to their clothing and want new and different outfits on a regular basis. This is one area where women spend a large amount of both time and money to have unique outfits to flaunt which makes the fabric market all the more attractive and worth several billions.

Due to pandemic and lockdown most of the retail shops were facing huge amount of loses because of customers not visiting the stores. Trying rooms were closed during the pandemic and people were unable to enjoy the shopping experience of trying clothes. This reduces the buying capability of customers.

Major retailers across the globe have tried the use of augmented reality by testing different apps and mirrors those are designed to replicate the fitting rooms. These efforts increased after the novel Coronavirus which led to the stay-at-home policy and stores were closed temporary causing the nation into recession.[1]

The virtual reality fitting rooms market has seen demand and growth in the last few years. The market value reached to 2.97 billion USD in 2020. This growth was mostly accelerated by the COVID-19 pandemic which changed the shopping habits of customers and gave boost to the e-commerce more than ever before. Now, nearly 35% of this market is owned by virtual dressing rooms apps.[2]

The facts and figures above all point out the attractiveness of the retail industry. It still has loads of potential which forces the retailers to constantly innovate, come up with new technologies and keep up with the rest of the world in order to do well in Pakistan. This is where TryOn comes in, a solution for retailers to keep up. Retailers who will not experiment with this technology, especially in apparel because of the possibilities it holds, would eventually find themselves falling behind the rest as sooner or later VFR will become the norm. It is not only beneficial to build brand loyalty but it will reduce retailers' expenses as well. By virtually trying on clothes, consumers can get a much better idea of how the product especially the unstitched clothing

[1] https://www.washingtonpost.com/business/2020/07/09/virtual-try-ons-are-replacing-fitting-rooms-during-pandemic/
[2] https://4experience.co/virtual-fitting-rooms-how-can-they-benefit-your-business/

would look on them. This will not only ease the decision making process but will also reduce the number of exchanges. Opportunity cost associated with returned clothing is greater than the handling cost. For instance if a consumer purchases a high-fashion or a seasonal item and takes it out of the sales cycle for a week or more only to return it back later, a retailer can lose up to 20 percent of the value on that garment alone. To make it worse, consumers who are not happy with their purchase are less likely to buy from the same store again. This problem can be solved by TryOn as this high-tech approach will tend to increase overall satisfaction, by giving the perfect idea of fit and how it would eventually look, reducing the number of returns and becoming the vehicle for turning one-time customers into repeat customers.

The apparel retail sector of Pakistan can be an early adopter of VFR technology by combining hybrid models and bricks-and-mortar retail with online fitting and customization. If companies adopt the VFR they can increase the consumer experience, gain revenue rewards, enhance consumer loyalty, and hence get a chance to outpace their competitors.

8 SERVICES

Firstly, after the machine has been purchased by a retailer, we will be providing **installation services** where our installation team will go and set up the machine in their store. The installation charges will be included in the price of the machine, however transportation charges will apply.

Secondly, **fee for service** will be charged to all the retailers. This means that whenever new clothing items will be added to the machine, the charges will apply according to the service granted. All retailers will be required to subscribe for this service on VFR purchase.

Thirdly, **maintenance services** will be provided every six months to check for any errors, fix bugs or to update software which will be free of cost for all the retailers however it will add up to our company costs and will be catered through our markup pricing model.

9 INDUSTRY ANALYSIS

Virtual and augmented reality is a set of hardware, software and service components which allows the end-users to envision and experience the virtual environment in real-time. The

demand for virtual reality (VR) and augmented reality (AR) is projected to increase in the upcoming years due to the growing demand of VR and AR services, reasonable hardware cost and growth in end-use application. The rising demand for VR and AR in education, healthcare, gaming, media and entertainment in the North American, Asia Pacific and European regions is anticipated to upsurge the adoption of VR and AR in these markets.

One of the NUST graduates Awais Shafique co-founded a company with the name Presize.ai. They developed an app which takes measurements of human body in real time and help the designer to come up with the perfect size of clothing for the customer. The idea grabbed attention worldwide and they raised $2M of investment in 3 rounds. Now they have been acquired by Facebook.[3]

The e-commerce industry is growing with a rapid pace and the future of retail stores is in danger. People have started using technologies to enhance their experience of shopping worldwide. TryOn goal is to step in this direction and enhance the user experience. Our goal is to provide an app to people in near future where they can try on clothes sitting at their home.

10 GLOBAL COMPETITION

Following are the predominant global players revolutionizing the retail industry:

10.1 Zugara

Zugara sets the industry benchmark by offering three product lines of its VFR, thereby encompassing both in-store and online retailers.

1. Webcam Social Shopper (WSS); Zugara introduced the WSS for retailers worldwide in 2009. The WSS software makes it possible for shoppers to turn their webcam into a magic mirror. They can then use it to view how clothes fit them virtually.
2. WSS for Kiosks; This is an augmented reality fitting room that can be used for both instore and out of home advertising. It can also be fully integrated with tabs for social media sharing.

[3] https://www.economy.pk/meta-acquires-nust-graduates-ai-company-presize-ai/

3. Virtual Style Sense (VSS); The VSS technology allows retailers to monitor their in-store inventory. It allows buyers to scroll and view various styles and colors of accessories and apparel.[4] (Zugara.com)

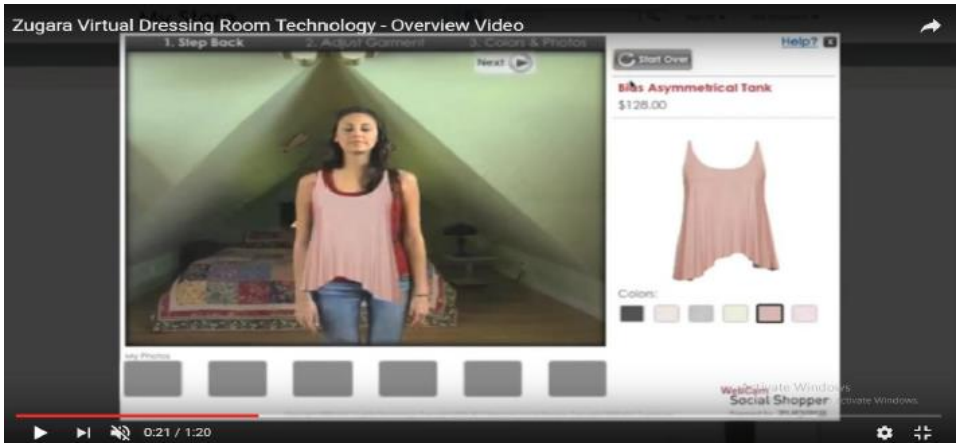


Figure 11:Zugara

10.2 Metail

Metail is a very impressive e-commerce virtual dressing room that takes in data of user's personal body measures and creates a model accordingly. All kinds of dresses along with shoes can be then fitted on the model which reflects how they will fit the users' body virtually. The entire process of virtual fitting is completely free and is available on mobile, tablet as well as desktop.[5]

[4] http://zugara.com/
[5] https://metail.com/

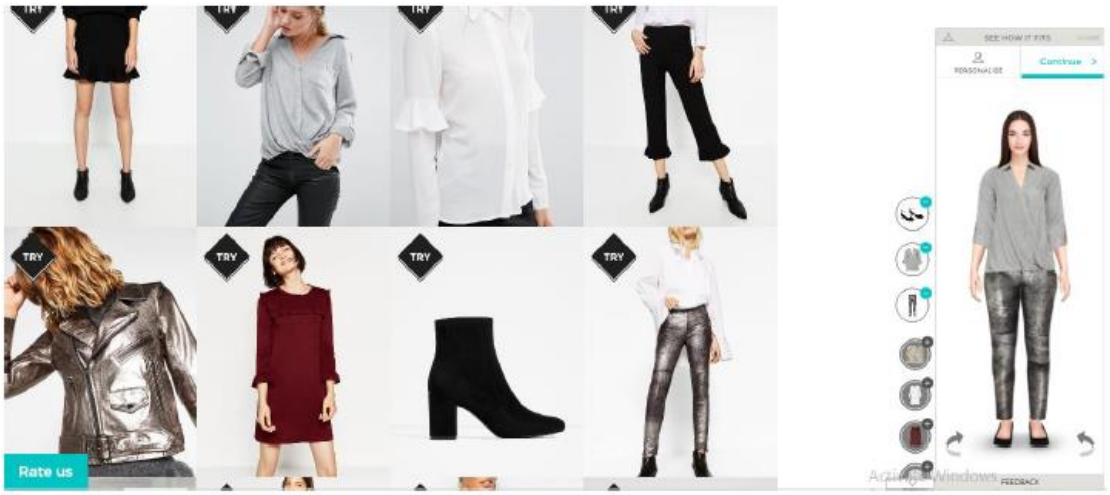


Figure 12: Metail site

10.3 Dressy

This is another e-commerce 3D virtual fitting room which allows customers to fit garments on their own body image. It charges commission to e-retailers when a customer tries on a dress virtually using Dressy and then adds the same product to cart or orders it. $20 is the maximum cutoff to commission that it charges per product.[6]

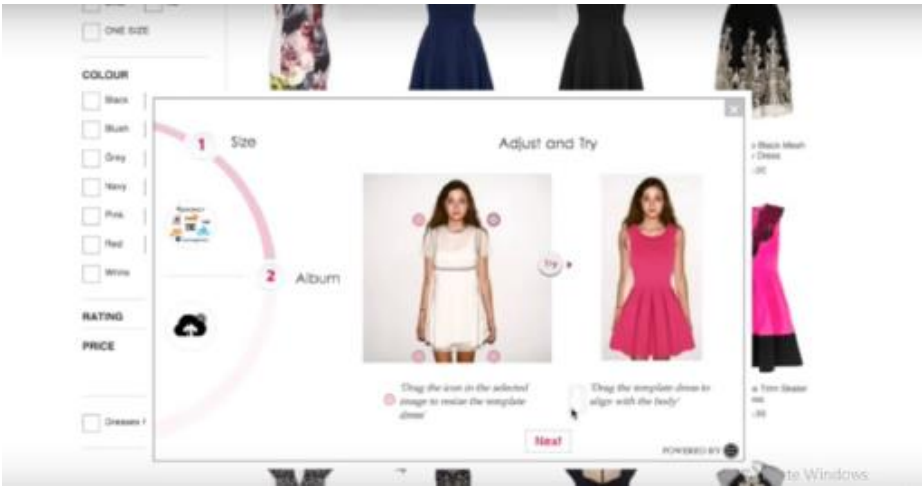


Figure 13:Dressy Interface

[6] https://dessy.com/help/virtual-fitting-room/

10.4 Fitnect

This is another fully customizable and user friendly virtual fitting room. It also deals in both apparel as well as accessories and allows buyers to visualize how different things look on them.[7] (Fitnect)

10.5 MemoMi (Memory Mirror)

Memomi is a full body mirror that augments the experience of trying on fashion apparel. Using the mirror people can try on items, virtually-change colors, styles and add accessories to make the perfect outfit all with the help of gestures. Moreover, the mirror allows the customer to get a 360-degree view of what they are wearing along with their previous try-ons in the mirror for comparison. The mirror functions by using multiple Intel real sense cameras along with Corning's gorilla glass to create the perfect shopping experience.[8]

10.6 Magic Mirror

This is an open source modular smart mirror platform. It's highly customizable and intelligent photo booth comprises of multiple applications including games, virtual try on and wear and compare. It is equipped with several components including Kinect and DSLR camera and costs around £5900. Since the magic mirror is essentially a photo booth and is not meant solely for instore shopping, the virtual try on app does not seem to be as accurate as would be needed for a proper shopping experience. Magic Mirror is offering its photo booth in numerous industries like marketing events, parties, museums etc. and already has a wide range of customers.[9]

11 COMPETITIVE ADVANTAGE

Our competitive advantage is basically derived from the fact that TryON is the first ever product of its nature to enter Pakistan. Thus, we have the first mover advantage right from the beginning. Moreover, by giving customers the option to virtually try on clothes; our product is geared to give our clients a competitive edge over conventional apparel outlets.

Taking a global perspective, no other VFR has ventured into unstitched clothing yet. Whereby, TryON aims to offer customers the ability to virtually fit unstitched garments on them. Hence, this will help people visualize how unstitched garments will look once stitched, thereby

[7] https://www.fitnect.com/
[8] https://memorymirror.com/
[9] https://www.magicmirror.me/Apps/3D-Virtual-Dressing

eradicating the uncertainty of buying unstitched clothes. Moreover, this initial step will also serve as a pilot test to assess the customer adoption rate for a virtual fitting room in Pakistan.

12 RESOURCES AND CAPABILITIES

For strategy implementation, the first and most important step is identifying the available resources and capabilities and this is done both from the client's end (the retailer) and the business's supply end (what TryON can offer). We have identified it by investigating client needs through primary research, industry and sector analysis, financial analysis and focus group discussions. The resources that are available are:

- **New technology** that is developed by the talented SEECS team hence no outside hiring is needed for technical purposes.
- **Customer desire and intent to purchase** which is very evident by the questionnaire conducted at the initial stage and market visit as well.
- **Research and development** by the SEECS team which is aiding in development of the product according to retailers and customers need.
- **Intellectual Property Protection** A patent will be applied for which will prevent duplication of ideas and increase revenue.
- **Well trained and equipped staff** which will be self-reliant and creative.

The capabilities that will help to achieve the competitive advantage are:

- **Technical knowledge** of our strong SEECS team which consists of CS students working tirelessly on the novel concept.
- **Interpersonal skills** of our sales team will aid in better promotion and marketing of the product and hence will increase our revenues.
- **Entrepreneurial skills** of our multidisciplinary team that is creative, risk taker, resilient and self-reliant.
- **Team expertise** of our multi-disciplinary team majoring in different areas such as HR, marketing and finance which will address every aspect of the business plan.
- **Board of advisors** that have different expertise which will aid in effective planning, organizational development and policy development.

- **Growth and profitability** as calculated in the financials hence there is a lot of potential in the coming years.
- **Risk mitigation** plans will be developed in order to address potential risks such as customer dissatisfaction, technical difficulties and marketing of the product etc.

13 MARKET RESEARCH

My market research for TryOn was two pronged. Initially we targeted the end consumer to assess the potential for a VFR in Pakistan. This was followed by a market survey to analyze the demand for VFR among major textile retailers.

As TryOn is a new idea in the Pakistani market, the focus of our primary research was to get a better view of the consumers and assess the usability of our product. For this purpose we carried out a consumer survey from the people who would actually be using this product in stores by virtually trying on clothes; and received a very positive response from them. From our survey we decided to target the upper class, and/or people comfortable with using/experimenting with new technology. However since the placement will be in-store, the end consumer is expected to hail from all categories and segments.

13.1 Survey and Consumer Reach

I carried out a survey initially to get an idea how the consumer will feel about this new technology. This was a very generic survey where we inquired about the current try rooms and how they would feel about VFR. We got a great response from males and females alike, both showing interest. Our survey was filled by a whopping 65.5% of females compared to 34.5% males. The majority of the people that filled out our survey fell in the age group of 21 - 30 where a total of 51.7% were aged between 21- 25 and 31% were 26-30 years old. All the respondents had diverse professional backgrounds including students, teachers, lawyers, engineers, businessmen, housewives and freelancers, etc. Since majority of the respondents were aged between 21 - 30 64.3% of them had income between PKR 25000 – 40000.

When inquired about online shopping 55.2% said they shop online for clothes in Pakistan. 62.1% people said they only shop when they needed to, and 20.7% said they shopped at least once a month. A question was also added to get a better idea of the favorite textile retailers. The results showed that Khaadi was in the lead with 51.7% votes followed by Nishat Linen with 41.4%

votes, Sapphire 31%, Gul Ahmed and Beechtree 27.6%, Agha Noor, Al-Karam and Sana Safinaz with 24.1% votes each and finally Ethnic with 17.2% votes. This gives a better idea of which shops to approach further for setting up Virtual Fitting Room.

When asked whether they try out clothes before purchase 34.5% said they always do while the majority said never, or at times. The reason being that 34.5% people faced problems when it came to try rooms mostly complaining about waiting in long queues for their turn when it gets crowded, security issues, try rooms being too small and not being up to the mark, some outlets don't even have the option of a try room especially in sale, privacy issues and changing clothes in try rooms especially in winters when you have to take off layers of clothes to try out an item then put them back on which can get tiring. Keeping all this in mind, we asked them how they would like the idea of having a virtual fitting room instead of a regular one where 31% answered if they had this option they would use it all the time, and 34.5% said they would be very much interested.

After thoroughly analyzing the responses, looking into the suggestions, we have decided to target the elite upper class for now, those who are very much comfortable using and experimenting around with new technology. We have also decided to start with shops in Centaurus and when the idea catches on to further move it other outlets not only around Islamabad but nationally across Pakistan. We would be targeting the relatively younger mature age group between 20 – 35 who can easily grasp new technology and don't have much time on their hands where TryOn will help them speed up their shopping.

13.2 CUSTOMER RESEARCH

To take our research further we visited the Centaurus mall in Islamabad and visited numerous brand outlets, talked to their managers in detail asking them of all the problems they faced on a regular basis with their try rooms and customers. This was followed by an informal briefing about TryOn, its benefits and how it can be a perfect solution for their problems. Below is the breakdown of the top brands and their responses.

Nishat Linen

One of the major problems that Nishat Linen faces is that of theft. Their store manager complained that people take five to six pieces or sometimes even more to try out and put one of

them in their handbags. They pull out the security tag which is usually secured on the label without bothering for the small tears in fabric. In such a case it is very difficult to keep track of all articles. For this reason they have made a policy that only four items will be allowed in the try rooms but the problem still persists.

After getting to know about TryOn, they showed a very positive response as it would totally eliminate their problem of theft. They inquired about the product in detail and where they could place it in that outlet. Contact details of the senior management team were also acquired to proceed further with the placement of TryOn in their store.

Sapphire

Sapphire also complained of the same problem as Nishat - theft. They further added that because of this issue they have to hire more personnel so that they could constantly have one person standing outside try rooms to make sure that the same number of clothes come out as were tried. They also said that if a woman that fits into size Large tries out a Small for herself, it often causes damage to clothes which stretch out causing tears in the fabric and making them useless for others. At times people don't purchase the clothes when they don't find the right size and mentioned that their sale of unstitched clothes is far greater compared to the stitched ones.

Sapphire gave us a very positive response as the person we were talking to was already familiar with the idea of a virtual fitting room and directed us to their headquarters the ones responsible for such decisions.

Al-Karam Studio

We got an average response from Al-Karam as the sale men were hesitant to share information in the absence of their manager. However they did say that unstitched cloth sells more and they rarely had try-room issues. They also added that try rooms are closed during sales.

Gul Ahmed Store

Gul Ahmed faced similar issues of theft, torn tags, and damaged clothes. As for the prêt wear, their retail operations manager said that could be something of a success in the future but not at the moment. On the other hand she had a positive response as far as unstitched apparel was

concerned and agreed that this would be great for the store and would also reduce the number of exchanged clothes.

Khaadi

The one thing Khaadi mentioned that their customers complained was that of long queues for the try rooms with could be solved through TryOn. They were eager for the idea and said that it would totally work with the right placement. They recommended placing it where there are no cameras to make the customers comfortable. Details of their regional manager were also shared to further talk the idea out.

Satrangi

Satrangi too complained of theft problems in try rooms. As they have more sales of unstitched cloth in their stores, they were open to the idea of TryOn. They said it would be a completely new idea which they believe people will readily adopt and it could drive up the sales further. We were also given the details of their regional manager to discuss this further.

13.3 MARKET SIZE

In retail industry the market size of AR globally was estimated to be worth USD 1853 million in 2021 and it is now forecasted to a readjusted size of USD 6736 Million by the 2028 with a CAGR of 20% during the forecast period of 2022-2028.[10]

The main factor of the growth of AR in the retail industry is the increase in smartphones which expanded the usage of linked devices. It also increases the online purchasing power of customers which encouraged the merchants to implement AR.

[10] https://www.prnewswire.com/

14 SWOT ANALYSIS

Internal	
Strengths	Weaknesses
1. Innovative technology - Being the first company in Pakistan to use this technology 2. Selling the product directly to the customers - close relationship 3. Higher responsiveness to customer demand – Lean approach 4. Strong network of suppliers 5. Strong team for handling sales and product development 6. Breakeven by the start of second year 7. Free maintenance	1. No partnerships 2. Limited initial investment 3. Client confusion or misunderstanding
External	
Opportunities	Threats
1. Customers are becoming tech savvy and want to save time 2. Internet can be used as a marketing tool 3. Customer satisfaction since they will be physically present while buying	1. Other competitors coming in such as online stores using webcam technology 2. Technical difficulties

15 THE LEAN APPROACH

To implement our business plan we have adopted the lean approach which dictates constant iteration of the business plan by taking the product to the market and focusing on consumer feedback. This saves time and enhances the end product quality. Since our virtual fitting room

(VFR) is a novel concept we will be focusing on a lean business model where we will revisit it after testing the product at various retail outlets. In accordance with that a summary of our business model has been shown on the next page. Each component has been summarized after the table and will be elaborated upon further in the business plan.

<table>
<tr>
<td rowspan="2">PROBLEM

1. Try room Congestion
2. Theft from try rooms
3. Time consumed by trying clothes on</td>
<td>SOLUTION

1. TryON 3D software for fitting on clothes in real-time
2. Lesser try room congestion
3. Lesser theft incidents
4. Time saving</td>
<td rowspan="2">UNIQUE VALUE PROPOSITION

“For progressive textile retailers who want to resolve try room congestion, clothing damage and, theft; TryON will enable 3D visualization of garments to aid in customer’s decision making process. Unlike global VFRs, we will also ensure virtual fitting of unstitched clothes to mitigate the uncertainty associated with them.”</td>
<td>UNFAIR ADVANTAGE

Patent that will be acquired for TryON software</td>
<td rowspan="2">CUSTOMER SEGMENTS

High end apparel retailers (Khaadi, Gul Ahmed, Cambridge)</td>
</tr>
<tr>
<td>KEY METRICS

1. Decrease in try room queues
2. Direct Sales after virtual TryON by clients
3. Decrease in theft</td>
<td>CHANNELS

Direct selling to retail outlets</td>
</tr>
<tr>
<td colspan="3">COST STRUCTURE

1. Product development cost
2. Customer acquisition cost
3. Installation cost
4. Maintenance cost</td>
<td colspan="2">REVENUE STREAMS

1. TryON’s sales
2. Installation charges
3. Fee for service</td>
</tr>
</table>

Unique Value Proposition

"For progressive textile retailers who want to resolve try room congestion, clothing damage and, theft TryON will enable 3D visualization of garments to aid in customer's decision making process. Unlike global VFRs, we will also ensure virtual fitting of unstitched clothes to mitigate the uncertainty associated with them."

Channels

Direct selling via live demos and presentations to retail managers will be our preferred channel to reach potential customers. Our target customer include high end apparel retailers including but not limited to Khaadi, Nishat, Gul Ahmed, Outfitters, Cambridge, Warda etc. We will also be able to derive an unfair advantage over competitors in case of securing a patent for TryON software.

Key metrics

The key metrics that we will be measuring include;

- decrease in waiting queues outside try rooms
- increase in sales right after clients virtually try on clothes
- decrease in theft incidents from try rooms

Remaining components have been discussed under their respective headings

16 STRATEGIC ALLIANCES

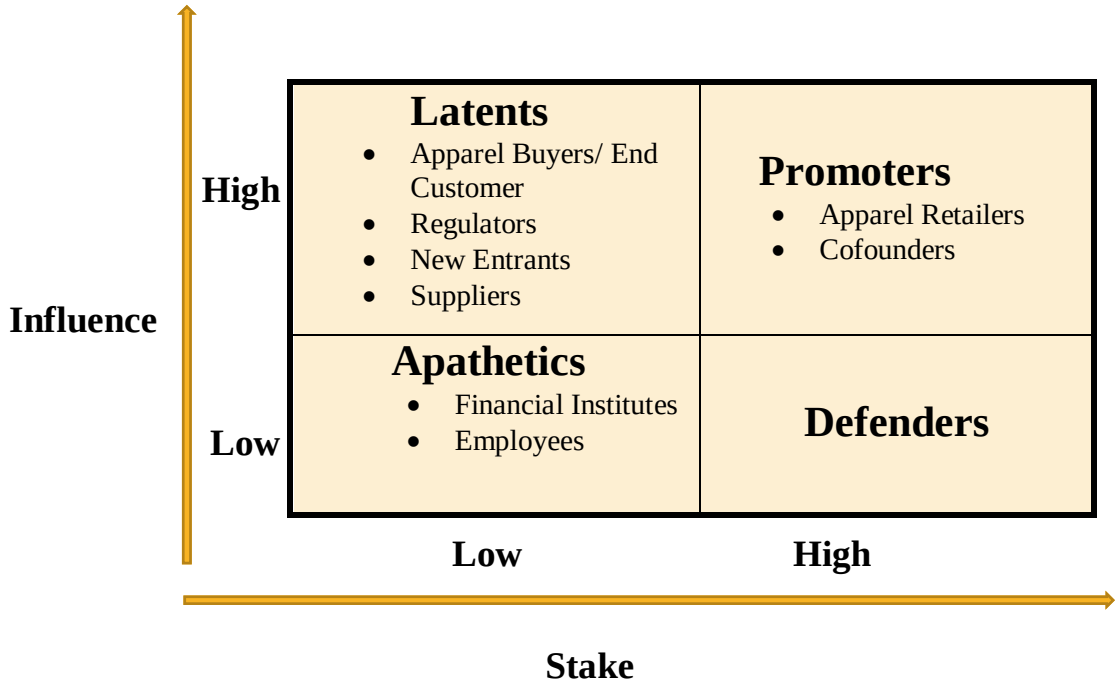
TryOn's strategic alliances are dependent on the stage of company and product development it finds itself in. Initially our virtual mirror will specifically target apparel and clothing stores. Similarly our strategic alliances will also be concentrated among major textile retailers of Pakistan including Khaadi, Sapphire, Gul Ahmed and others discussed above. Here we will adopt incentive based techniquess to obtain strategic benefits of expansion and marketing of our product. As the end consumer will become flexible with our product, we will utilize the chosen retailers to distribute our technology throughout their branches in Pakistan.

Beyond this stage, our strategic alliances will grow with our customers and consumers. The potential is limitless with an explosion of online shopping in Pakistan. We have also reached out to online retailers such as Kaymu.pk and Daraz.pk and received a favorable response, thereby exposing our technology to a whole new range of customers. In addition our virtual technology can be used for accessories, another arena for strategic alliances. Textile conferences and association with virtual reality products' manufacturers will also be of particular benefit.

International manufacturers of virtual technology can also be partnered with for up gradation of our technology and in return, increasing their exposure in the booming emerging economies of Asia. Backward integration for more control on the manufacturing process and hence enhanced economies of scale will also be on the cards for TryOn.

Lastly, since we are a startup we will be open to alliances with incubators and accelerators primarily for funding and relevant industrial mentoring.

17 STAKEHOLDERS ANALYSIS



18 DOMINANT STAKEHOLDERS

Apparel retailers are one of the most dominant stakeholders in our case as they will be investing in our product and will be our direct clients. Our business development team will be giving live demonstrations to the concerned managers to convince them of TryON's utility. Winning over the hearts of those managers will act as a gateway into the apparel industry.

Not to mention that the end consumers i.e. apparel buyers are also of equal importance. They will have the highest influence on the long term success/failure of our venture despite having the lowest stake in it. If the end customers find the product too complex or are unsatisfied by its results, they will not adapt to it. This will in turn make the retailers abandon our product too as it won't be adding up to their bottom-line. Thus the long term success of our venture is only possible if we ensure that the apparel buyers find TryON handy and useful.

Promoters

The cofounders of TryON have the highest stake and the ultimate decision making authority. They will be directly affected by the prospects of this venture. Thus, the success or failure of this venture is directly linked to the nature of decisions made and, the amount of effort put in by the cofounders. Thus they will act as the first and foremost promoters for TryON.

The apparel retailers once won over by our team, will act as our most vital external promoters. Our product will be get to reap benefits of buzz marketing via the retail outlets, which will in turn create a ripple effect, encouraging other retailers to follow suit.

Latents

The end consumers though having the most influence will have minimal stake in our venture. The same goes for new entrants, the regulatory bodies e.g. Pakistan Competition Commission and, the Kinect SDK suppliers e.g. Microsoft. All of these have nothing to lose/gain from this venture but act as the most influential stakeholders of this venture. Thus they will act as latents.

Apathetics

Financial bodies such as banks and the externally hired support staff are termed as apathetics since they have minimal stake and influence over our venture. Bootstrapping will be initial strategy deployed to raise the initial capital required for this venture. Minimal reliance will be made on bank loans which will keep their influence minimal.

19 MARKETING STRATEGY

TryOn's marketing strategy has been developed by focusing on the 4P's of marketing - price, product, promotion, and place.[11] Each of these factors is elaborated on below.

19.1 Price

As TryOn is a new product in the Pakistani market and retailers are still unsure how this technology would work or whether consumers would respond well to it or not, many would be unsure as to if she should or should not invest in this. And rightly so as we know that many are not risk takers, for now we have decided to base our pricing of TryOn as cost plus markup. For the first 3 years we will steadily increase the mark up for retailers and consumers to be comfortable with virtual fitting rooms and once the idea catches on we would move to higher value based pricing both for the product and the goodwill we would have generated by that time.

Our starting price for TryOn is PKR 225,000. This includes a markup of 25%.

19.2 Product

TryOn has both tangible and intangible elements. The tangible product is the virtual fitting room equipment the hardware that we would be selling to retailers and the intangible services would be both for the retailers and the consumers. As of now, this is an unrealized want as both the retailers and the consumers have not yet realized they need it but it would solve a lot of problems of both these parties. It will completely transform the shopping experience as it would be a big leap in technological advance in the retail industry.

19.3 Promotion

We have decided to promote TryOn directly to retailers. Since we are placing TryOn only on branded stores which are not many in Pakistan, we will directly go to the retailers and talk to them one on one about all the benefits that TryOn has to offer and the problems it would solve. For this we have made videos, brochures about TryOn, we have carried out surveys from consumers that show a lot of interest in this product, we will show the prototype of TryOn to

[11] http://www.purelybranded.com/insights/the-four-ps-of-marketing/

retailers so that they can have a better idea of how it works and to fully understand its benefits and advantages.

On the other hand, we will also be promoting this product to the consumers so that they too are aware of TryOn. For this, we will have two types of promotion strategies; one general and one customized. The general strategy will simply be about the awareness of virtual fitting rooms, how to use them, its benefits and what it can do for the customers. The second customized strategy will be made with different brands that purchase TryOn. This branding and promotion will be more specific to the said brand keeping in mind what it offers and will be tweaked specifically according to them, what it offers and how that store's customers can benefit from TryOn.

Since we are placing this product in Centaurus Mall in Islamabad, we would want to put TryOn on the ground floor in the main area as part of our general promotion strategy so that people can use the system, interact with it and get to know all about it. For this we would have to rent a kiosk to place the machine in it so that people can come and try it on. This main machine would have all the options of different clothes, sizes to choose from, but it would not contain any specific brand as the purpose of this would only be to generate awareness among people, encourage them to use it, answer their questions, see what sort of problems people may be facing, make it more friendly to use. This would also be part of our lean approach to get as much feedback as we can and incorporate it into the system.

The clothing industry is extremely competitive in all urban areas of Pakistan. Therefore, social media marketing will be an important tool for us which we will aggressively employ. By portraying our software as the cool thing to have, we will ensure it becomes a necessity. Even by cracking one clothing store, all of the big ones will likely follow suit. We would also have TryOn's advertisement on different retail and tech forums online, and make our presence in fashion shows and technology conferences so people are aware about our product.

For our customized promotion, TryOn would display the names of all the brands and specific stores that have this facility everywhere in its promotions, other than that TryOn would also be featured in different articles in magazines specific to different brands. Also the look books would also have detail coverage of TryOn so that maximum people can get to know about it. We would

also want to place standees but that would only be in Centaurus' proximity and all the local newspapers would be featuring TryOn.

19.4 Place

The place we have decided for TryOn is the Centaurus Mall in Islamabad. We have already talked to the brands and they are very much interested in this product. The stores already mentioned have high foot traffic in Centaurus and has the right crowd which would easily be able to interact with TryOn. Once we have placed TryOn in their shops in Centaurus, we would further move out in other shops first in Islamabad only and then move out nationally to Pakistan.

19.5 Segmentation

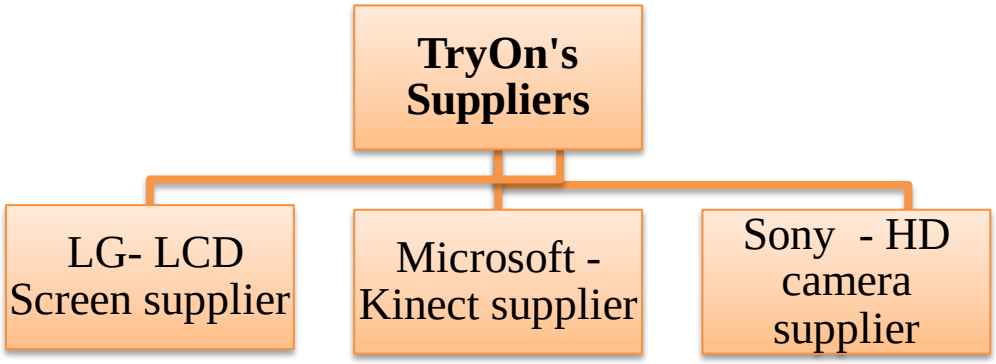
We are targeting the upper, upper middle and middle class of the twin cities for TryOn, as these are the people who shop regularly in the same/similar level brands available at Centaurus Mall Islamabad. This segment is already aware of virtual fitting rooms in one way or another, be it experiencing it themselves abroad, hearing about it from friends/family who travel abroad or having seen such things in movies. Also people who like to shop online globally are also aware of virtual fitting rooms as many online websites offer this feature so this segment would be easier to target and engage.

19.6 Customer Management

Our dealing will be with a limited number of customers that is only the retailers/brands that purchase TryOn. For that we would have a separate designer/ software expert for different brands to cater to any/all their problems. We would have a close contact with them to maintain long term relations with them. We would help the brands in different technologies that they can use through TryOn for example the machine can store the different sizes, choices of people and can present trends or peoples preferences which can eventually help the brands in their own designs.

20 SUPPLIERS

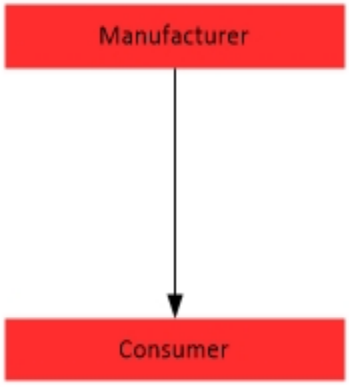
TryOn will have three streams of suppliers with whom it will have to maintain a very close relationship because as soon as the demand will arise, the company will need quick delivery of all the three components which are: LCD Screen, HD camera and Kinect. The following diagram shows the chosen suppliers:



The software required for programming, algorithm design and three dimensional designing will be used from the CS labs at SEECS, NUST.

21 DISTRIBUTION STRATEGY

We will be opting for a direct distribution strategy since our product is a high involvement good. This will benefit since it will give us complete control over what image we portray and it will help the retailers to understand the product in a better manner. Our sales team will directly go to different shops and promote the product and then our DAE technicians will visit the shops where the machines have been sold in order to install them.



Direct Distribution

An integral component of our distribution strategy in the future will be targetting the branches of various retailers throughout Pakistan. After locking in clients in Islamabad, we intend to utilize their branches in other major cities for placement of our VFR. In this scenario their existing distribution channels for textile and apparel can be utilized for transport of our technology through out the country.

22 OPERATION PLAN

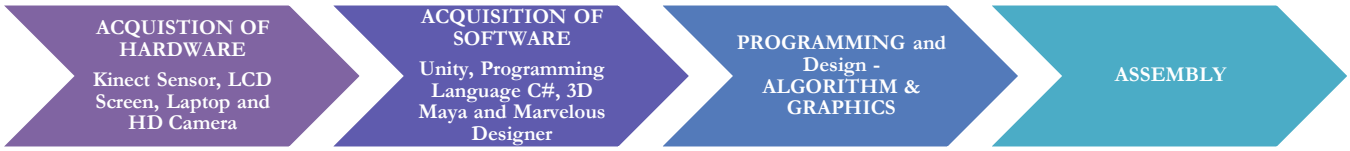
TryOn's Virtual Fitting Room will be produced via a range of operations, each of which will be specifically discussed and catered for in this operational plan. This includes but is not limited to

prototype development, production plans, inventory management, selection and acquisition of a location, hiring a sales team, work distribution, delivery and maintenance and up gradation.

As of now, the prototype has been developed with generic models of local dresses embedded in it. Once the accuracy testing is completed we intend to distribute our product among select few retailers, gain their insight and improve the product accordingly, a direct repercussion of following the lean business model.

22.1 Prototype

The following production workflow has been adopted for manufacturing of prototype.



All hardware has been ordered online while own laptops have been used for programming and design. Similarly, the labs at SEECS were well equipped with all the required software from where they were accessed. After acquisition of the equipment in October 2016, work started on the programming and design which has now reached its final stage. Three dimensional designing has been completed and after accuracy testing formal business operations will commence.

22.2 Operations

It is important to focus on the execution strategy which will affect the day to day running and holds importance for financiers, employees and management alike. This section sheds light on the proposed location, supply and inventory management, production and distribution, order management, website development and other generic requirements. TryOn's VFR is a built in software product for which, once the software has been programmed, only requires hardware assembly, deployment and maintenance. However if the retailers require a customized software, the changes will be incorporated and hence new programming requirements will emerge.

22.3 Location

After analyzing various locations across Islamabad using the factor rating method we have arrived at two possible options – either renting a small facility in industrial area of Islamabad or applying for a small office in TIC (Technology Incubation Center) at NUST. We expect lesser

rent at TIC and proximity to labs at SEECS and mentors; however the transportation and distribution costs will be greater as compared to the I-9 industrial area. TIC has also seen an influx of startups in recent times so we expect competition. It will be our first option but I-9 industrial area is still on the cards. Rent expense will be incurred either ways. In the growth years i.e. second year and onwards we expect an expansion in operations in which scenario we will seek a larger facility to store inventory and conduct any official activities.

22.4 Production

After the software has been programmed, the production process will primarily include assembly of the hardware and test run of the software. Once a retailer places an order we will produce three dimensional designs of the collection and incorporate them in the hardware. After acquisition of the hardware, assembly will be subject to 3-D designing process which can take up to 30 days. Assembly, transport to the retailer outlet and linking the system will require 1-2 days.

22.5 Supply and Inventory

Many suppliers will be contacted and after seeking quotes the ones providing optimal quality and cost balance will be selected. To ensure quality, delivery time, charges and any other requirement a contract will be drafted before a formal relationship commences. We will have a greater bargaining power with the LCD and HD camera suppliers as many alternatives are available. However, for Kinect, Microsoft is the only supplier.

Inventory storage costs will not be a major concern for TryOn since initial demand will be limited as it is a novel concept. Once it has been proved we will expect more orders and hence a need to maintain inventory, by the end of first year. Location specifications are elaborated on below but it is important to mention here that one room will be dedicated to inventory storage and other office equipment.

22.6 Order Management

Following activities will be progressively performed for order execution:

- Mobilization of Sales team to contact the Head Offices
- Marketing activities to generate interest
- Order Management which will be placed via sales team and a formal meeting with CMO will be arranged for the subscription contract.
- Contact suppliers and order necessary hardware.

- Start 3D designing process
- Input the software in the system
- Contact retailer for installation process go ahead
- Mobilize the installation team
- Distribution – transport and assembly

22.7 Quality Control

To ensure the best-in-class virtual mirror and overall customer and consumer experience, many TQM initiatives will be adopted by the TryOn team. Feedback and other processes will be constantly monitored for any defects or changes from the norm. The engineers in the startup team will perform these quality assurance activities. Following rules will be adhered to for insuring a constant high class quality:

- A focus on continuous improvement will ensure that everyone works to their maximum potential. This initiative will be aided with setting goals for the employees and training them to fulfill them.

- All hired employees will undergo a stringent recruitment process to identify the best ones.

- All equipment will be maintained and checked weekly for any abnormalities.

- Test runs including accuracy testing after assembly of equipment will be performed for each device.

- Seek constant customer feedback by utilizing the sales team and DAE technicians. A website will be developed for the same reason where B2B communication will be enhanced and constant monitoring ability will be provided for TryOn.

- Publications of the results and visual aids will be put up to remind employees of expectations from them.

- Whenever any problem arises the 5-why technique will be adopted to ensure that we get to the root cause of the problem and eliminate it to prevent future issues.

It is also important to note that since we will have dedicated staff with the required expertise and a lead time of at least 30 days for each unit, we expect lesser instances of failures and deviation

from outlined norms. Each assortment of components will be thoroughly inspected by the DAE technicians on site as well. A lesser number of initial customers with our VFR being a high involvement purchase again strengthens the case for enhanced quality measures being in place.

The lean startup model itself minimizes the need for quality control as it dictates continuous monitoring of performance metrics and continuous improvement till complete customer satisfaction is achieved.

22.8 Distribution

Although covered in detail under distribution strategy, this section solely focuses on the operational aspect. TryOn will be targeting 5 textile retailers in the first year, namely Khaadi, Gul Ahmed, Sapphire, Nishat and Al-Karam. The stores in Centaurus Mall will be the primary preferred location. To operate there the factors that will be focused upon include:

- Assembly of equipment
- Transport via rented vehicles
- Mobilization of DAE technicians for onsite installation
- Installation and linking of computers to office server
- Monitoring and up gradation

For these activities necessary amounts have been allocated under the finances category as well.

23 RISK MANAGEMENT PLAN

The following table crafts out a detailed risk management plan for our venture.

Risk Category	Risk Description	Score	Ranking	Risk Mitigation Strategy	Responsible Party
Technological	1.Customer adaptation lag due to the behavioral change involved	9	H	❖ Simplify product usage/minimize complexities ❖ Formulate a detailed training methodology ❖ Hire technicians to train client's staff	TryON's software development team
	2. Technical failures/bugs in software	5	M	Ensure premium software quality/minimize bugs	"
	3. Data breaches by hackers	3	L	Ensure a strong firewall network	"
Infrastructural	1. Lack of locally developed state of the art infrastructure (SDKs, LCD) to support this technology	2	L	Import LCD & Kinect SDK	Cofounders
Financial	1. Lack of capital with cofounders to invest in TryON's product development	1	L	❖ Bootstrap ❖ ❖ Seek loan from banks	"
	2. Lack of capital with retailers to purchase TryON	5	M	❖ Target high-end apparel retailers only ❖ Go for mark-up pricing instead of premium pricing	"
Economic	Unfavorable economic indicators (high interest & inflation rate)	5	M	Adjust for these factors while product pricing	"
Legal	1. Patent infringement by our rivals	7	H	Take legal action	"

	2. TryON being sued for IP infringement	3	L	Ensure uniqueness & product innovation	"
Capacity	1. Lack of space in retail outlets to install TryON LCD	4	M	Target retailers with good store capacity e.g. (Khaadi, Gul Ahmed)	Business Development team
	2. Lack of technicians on boards for software iteration and up gradation	2	L	Hire a team of technicians for exclusive up gradation	HR Dept.
Competitors	New entrants coming up with better product than ours	8	H	Ensure periodical software iteration and up gradation	TryON's software development team
Leadership/ Management	1.Conflict amongst cofounders	6	M	❖ Use Delphi technique for decision making ❖ Assign a mediator for conflict resolution ❖ Craft out a clear communications architecture	HR Dept.
	2. Lack of clear objectives	4	M	❖ Develop SMART goals ❖ Conduct periodical meetings to clear out confusions	HR Dept.
	Sum	64			
	Average Venture Ranking	4.57	M		

Scale	Rank
1-3	L
4-6	M
7-9	H

The average risk ranking of our venture comes out to be 4.57 which ranges in the medium category. The highest risk is posed by technological factors because of the breakthrough technological development that our venture is involved in. The best way to mitigate consumer reluctance is by minimizing product complexities and behavioral change involved by customers. Also, the retail staff needs to be thoroughly trained by our sales team to ensure smooth product functioning and usage. Next, new entrants may come up with similar or better product. Hence, continuous product iteration based on lean methodology is pivotal to ensure us a sustainable competitive advantage in the long run.

24 LEGAL REQUIREMENTS

Details about the company formation and allocation of the share capital, warrants special mention. TryOn will be incorporated as a private company limited by the number of shares every member possesses. This will allow trust and credibility to develop, thereby aiding the company in achieving its future objectives in a better manner. In addition incorporation will allow a separate legal status for TryOn and equip with a deal of perpetuity.

All members will subscribe to the article and memorandum of association which will be drafted for company establishment. The usual minimum capital requirement of PKR 100,000 will be adhered to, thereby making our official incorporation fee PKR 5,000. All seven members will equally contribute towards both the amounts hence receiving equal equity in the company. The company will also be open to investment from external entities but the equity available for them will also be restricted to a maximum of 15% thereby allowing the founding members more leverage over the operations. After receiving the certificate of incorporation formal proceedings for the company will begin.

25 FINANCIALS

In this section we will discuss about the 5 years financial projections of TryOn. This will be an overview of our business plan and how are we going to maintain long term sustainability.

25.1 REVENUE MODEL

Three revenue streams have been identified for TryOn, which include:

1. Charging the upfront prices of TryON equipment including installation.
2. Charging as per the creation of 3D models of dresses and patterns of dresses.

The costs incurred will be discussed under finances. Following will be the revenue through our product and after sale services.

Revenue /Services

Price Heads	Unit	Price
Hardware	PKR/Unit	306,440
Software Services	PKR/Annum	412,206
Price Increase	Per Annum	10%

	Units	Price	Weightage
Upfront charges per unit	1 to 10	326,000	60%
	10 to 50	293,400	20%
	50 above	260,800	20%
Blended price based on Weighted Avg		**306,440**	

Unit price of TryOn is given in the figure shown above along the service charges calculated as per blended price of our bundle packages. We will also give discount to a brand buying multiple number of TryOn screens for their outlets. In the figure above we can see the difference in price if a brand is buying 1 to 10 units and a brand buying 10 to 50 units. We have assumed the 60% of our hardware sales will fall in 1 to 10 units/brand, 20% will fall in 10 to 50 units/brand and 20% will fall in 50 and above units/brand. Based on these assumptions we have calculated the blended price of one unit and that is 306,440 PKR. The above table shows the package bundles we are offering to our customers. The packages are divided as monthly, seasonally and yearly. The number of 3D models and patterns made for the brand vary as per the bundle offer, they have selected. Below table shows the number of 3D models and patterns made for a brand in a specific package, the price and the average revenue per month and per year.

		Models	Patterns	Price	Price	Custome	Avg.	Avg.	

		(Quantity)	(Quantity)	per pattern	per model	r Rate	Monthly Rev.	Annual Rev.	
Service charges	**Monthly Bundle**	25	40	52	2000	52,080	52,080	624,960	30 %
	Seasonal Bundle	50	140	44	1800	95,304	31,768	381,216	40 %
	Yearly Bundlge	150	420	33	1530	240,771	20,064	240,771	30 %
Blended Annual **412,206**									
Effective Monthly **34,350**									

We are proving 25 3D models of clothes and 40 patterns of designs in our monthly bundle. Price per 3D model is 2000 and price per pattern is 52 PKR. We assume that 30% of our customers will go for the monthly bundle package. In our Seasonal bundle package, we are offering 50 3D models and 140 patters and the price per 3D model is 1800 PKR and for the pattern it is 44 PKR. We assumed that 40% of the brands will go for this package. In our yearly bundle package, we are offering 150 3D models of clothes and 420 patterns. Price per 3D model in this package will be 1530 PKR and for the pattern we will be charging 33 PKR. Based on the probability and assumptions our blended Annual revenue per brand will be 412,206 PKR and monthly revenue per brand will be 34,350 PKR.

25.2 Revenue Expansion Plan

Going forward we are planning to introduce this technology through a mobile app. Where customers of a brand will be able to try dresses through augmented reality using their mobile camera. We will then consider charging a percentage of the sales made through TryOn ap. Another revenue model is the inclusion of ads in the product. When TryOn screen will be on

standby mode and is not being used by the customers of the brand we will put ads of other products in mutual collaboration with the brand and will share the revenue with that brand.

25.3 Cost

In this section we will give an overview of the cost that will incur at the time of launch of the business. Complete financials projections sheet will be provided with this report as well. As discussed earlier, costs that will be incurred by TryOn include:

1. Product development cost; the cost involved in developing TryOn software and interface, purchase of Kinect and vertical LCD.
2. Customer acquisition cost; incurred by hiring sales staff to promote this product directly to retailers.
3. On-site Installation cost; of hiring DAE technicians who commuting to and from the client's site to setup the entire TryOn fitting room.
4. Maintenance cost; of high technicians who look after software up gradation, bug removal and maintenance.

25.3.1 Key Assumptions

Here we will take the key assumptions based on which our financial projections are prepared. Following is the overview of the costs incurred during the process.

CAPEX

Capital expenditure will be required to kick of our operations. The main cost would include the office and equipment. assembling line and equipment for the product, company registration and office space. The total capital expenditure would be 5,000,000 PKR. 10 lacs in this amount will be taken as a loan from the bank which we will payback in installments.

Cost Heads	Unit	Cost
Office and Allied Equipment	PKR	1,500,000
Assembling Line & Equipment	PKR	2,500,000
Trade Mark & Company Registeration	PKR	100,000
Office Outfittings	PKR	900,000
		5,000,000

Equipment Manufacturing Cost

The equipment used will be imported from China. The main cost in the production would be the screens, processors and casing of the product, assembling cost and the delivery charges. Details of the hardware cost are mentioned below.

Cost Heads	Unit	Cost
Material Cost (Screens, Processors & Casing)	PKR	175,000
Assembling Cost	PKR	20,000
Duty and Delivery	PKR	50,000
Installation Cost	PKR	5,000
		250,000

Admin Expenses

Following are the operational expenses. This includes the salary of our employees, marketing cost, office rent and warehousing cost. For formal business proceedings to begin a production facility will be rented. We will start small and only need at maximum two rooms for official activities and inventory storage. Help will also be sought from TIC, the incubation center on NUST premises. The rent has been increased over years keeping in mind inflationary factors. A specific amount has also been allocated for logistics and transportation cost which includes transferring the equipment for onsite installation and other miscellaneous costs that might arise.

Staff training will not cost us much as the product is built in-house and the startup team members possess expertise on all the areas relevant to major operations. In addition, the extent of our day to day operations is not labor intensive thereby minimizing the need for extensive training. Office supplies and general maintenance cost has also been accounted for above.

General Assumptions

Admin Expenses

Cost Heads	Unit	Cost	2022	2023	2024	2025	2026
Technician Salaries	PKR/Month	25,000	300,000	345,000	396,750	456,263	524,702
Unity Developer	PKR/Month	60,000	720,000	828,000	952,200	1,095,030	1,259,285
3D - Modeler	PKR/Month	60,000	720,000	828,000	952,200	1,095,030	1,259,285
Full Stack Developer	PKR/Month	45,000	540,000	621,000	714,150	821,273	944,463
Graphic Designer	PKR/Month	35,000	420,000	483,000	555,450	638,768	734,583
Marketing	PKR/Month	300,000	3,600,000	4,140,000	4,761,000	5,475,150	6,296,423
Q/A Engineer	PKR/Month	45,000	540,000	621,000	714,150	821,273	944,463
Sales Person	PKR/Month	30,000	360,000	414,000	476,100	547,515	629,642
Management HR	PKR/Month	80,000	960,000	1,104,000	1,269,600	1,460,040	1,679,046
Office Rent	PKR/Month	70,000	840,000	966,000	1,110,900	1,277,535	1,469,165
Warehousing	PKR/Month	35,000	420,000	483,000	555,450	638,768	734,583
		785,000	**9,420,000**	**10,833,000**	**12,457,950**	**14,326,643**	**16,475,639**

Here we will talk about the general assumptions regarding market acquisition, inflation and the taxes involved during the process. We are assuming that we will be acquiring 5% of the total

market every year. Inflation on the items is accommodated every year for 15%. We will also have to bear tax of 40% everywhere.

Market Acquisition	Per Annum	5%
Depreciable Life of CAPEX	Years	5
Months in a Year	Months	12
Inflation	per Annum	15%
Tax	%	40%

25.4 Profit and Loss Statement

		2022	2023	2024	2025	2026
Revenue through Hardware	PKR	5,056,260	25,237,058	47,378,370	127,364,070	204,848,451
Revenue through Software Services	PKR	6,801,394	33,947,458	63,730,695	171,322,919	275,550,512
COGS	PKR	4,125,000	26,204,063	62,610,240	214,213,844	438,499,033
Gross Profit	**PKR**	**7,732,654**	**32,980,453**	**48,498,824**	**84,473,145**	**41,899,929**
GP Margin		*65%*	*56%*	*44%*	*28%*	*9%*
Operational & Admin Expenses	PKR	9,420,000	10,833,000	12,457,950	14,326,643	16,475,639
Depreciation	PKR	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Operating Profit	PKR	(2,687,346)	21,147,453	35,040,874	69,146,503	24,424,290
OP Margin		*-23%*	*36%*	*32%*	*23%*	*5%*
Interest	PKR	27,896	22,185	16,301	10,239	3,992
EBT	PKR	(2,715,242)	21,125,268	35,024,573	69,136,264	24,420,298
Tax	PKR	(1,086,097)	8,450,107	14,009,829	27,654,506	9,768,119
Net Income	**PKR**	**(1,629,145)**	**12,675,161**	**21,014,744**	**41,481,759**	**14,652,179**
NI Margin		*-14%*	*21%*	*19%*	*14%*	*3%*

The revenue through hardware is calculated by multiplying the number of units sold to the brands per year. These figures can be found in the financial projections inside market size, assumptions and packages. Cost of goods sold is the total number of units sold including the cost of installation over the year. This is calculated from the equipment manufacturing cost in the assumption sheet and the total number of units sold per year taken from the market size.

After deducting the cost from the revenue, we are left with the Gross Profit. In the same manner all the other costs including admin expenses and depreciation we are left with operating profit, which is negative in the first year and by the second year our company will be making profit.

Finally, after deducting the interest rate and all the taxes applied, we are left with Net Profit. In the first year our company will bear loss and by the second year we will be making profit.

rrived at earnings before interest, tax, depreciation and amortization.

Debt Schedule Assumptions

We will take 10 lac PKR loan from the bank in order to start our business and will invest the remaining amount as capital. The loan will be taken through Kamyab Jawan which we will return to the bank quarterly on 3% interested rate.

Loan Amount	PKR	1,000,000
Loan Tenor	Years	5
Kamyab Jawan	%	3%
Payments		Quarterly. Fixed Payments

Payment Schedule

Following is the payment schedule in which we will be returning the laon. We have to pay 10 lacs loan acquired from the bank in the following manner. The loan will be returned to the bank in 20 months.

Installment	Prinipal Outstanding	Principal Payment	Interest	Installment Amount
1	1,000,000	46,531	7,500	54,031
2	953,469	46,880	7,151	54,031
3	906,590	47,231	6,799	54,031
4	859,359	47,585	6,445	54,031
5	811,773	47,942	6,088	54,031
6	763,831	48,302	5,729	54,031
7	715,529	48,664	5,366	54,031
8	666,865	49,029	5,001	54,031
9	617,836	49,397	4,634	54,031
10	568,439	49,767	4,263	54,031
11	518,671	50,141	3,890	54,031
12	468,531	50,517	3,514	54,031
13	418,014	50,896	3,135	54,031
14	367,119	51,277	2,753	54,031
15	315,841	51,662	2,369	54,031
16	264,180	52,049	1,981	54,031
17	212,130	52,440	1,591	54,031
18	159,691	52,833	1,198	54,031
19	106,858	53,229	801	54,031
20	53,628	53,628	402	54,031

25.5 Return Estimation

Based on our business following will be the free cash flow to the firm. In year 2022 we will bear loss as our burn rate would be high and we will spend on running the operations without capturing good share of the market. We will start making profit by year 2023 and by the end of year 2026 we will be making the profit of 15,654,574 PKR. Payback period of our business will be 2 years.

		2022	2023	2024	2025	2026
FCFF	(5,000,000)	(612,408)	13,688,472	22,024,525	42,487,902	15,654,574
	1	1	-	-	-	-

IRR	**143%**
Payback Period (Years)	**2**
Net Present Value	**36,268,635**

26 FUTURE WORK

Improving the cloth alignment around the human body:

The cloth alignment part is done by us but for a perfect product it must be improved in order to launch the product in the industry. That will give more realistic view to the customers and they can guess more accurately about the size and fitting of the dress. Right now it is still under development and we are working on it to make it perfect.

Full dresses:

Right now we have focused only on the upper part of the dresses like shirts, kameez etc. We are not showing pants right now as we wanted to make the upper part perfect first. This is part of the project and we will work on it later on after we are done with the shirts with full satisfaction.

Video Quality Improvement:

Right now we are using the video stream coming from kinect directly. We are also using the HD camera for the video stream but work has to be done to make it crystal clear to make it eye catching system for the customers

Include a brief summary of how the proposed solution is going to/has addressed the problem statement specified in the introduction section. Provide an overview of what kind of evaluations were undertaken in order to prove that the solution really solves the problem with evidence on results findings.

Deploying the system in the market:

We have already discussed our project with different top brands currently Pakistan have in the industry. The response from them was very positive. Now as our project is in a presentable form and we are ready to give a demo to the buyers. We will need to make a team to carry out the deployment procedure and make contracts with the buyers. A lot of work in that case is required to execute the idea in well-mannered form.

27 EXIT STRATEGY

If after commencement of operations, TryOn does not yield the predicted revenue, management team will consider an exit strategy. This can be the result of the textile retail industry not being ready for TryOn, huge investment requirements and an inability to attract investors, or consumers still preferring the traditional physical try rooms compared to VFRs. Our options in such a scenario would be to put TryOn as a public company so that we can get investments through public money/stocks/shares, or we could sell off our legal restrictions and allow other people to come in and use this technology by being a part of it or allowing acquisition by selling the business.

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