

IMPLEMENTATION OF VIRTUAL FITTING ROOM FOR ONLINE FABRIC BUYERSSudha Misra ¹, Dr. D.Arivazhagan²¹Research Scholar AMET University, Email id: Sudhabindra@gmail.com ; Phone no: 09880459013²HOD Department of Information Technology, AMET University, Chennai.Email id: it_manager@ametindia.com ; Phone no: 09940296595**ABSTRACT**

Millennials are the demographic chart beginning birth years from the early 1980s to the early 2000s. In this generation, there's a marked increase in use and familiarity with communication, media, and digital. With the advancement of Internet technology and smart phones, e-commerce is witnessing significant growth in India. While online shopping is growing, millennials still prefer to shop from a physical store as compared to online option. The main reasons for choosing physical store were lack of 'touch and feel' of the fabric followed by problems of right fit. In order to make online shopping more popular the following areas need more work (a) Sizing and fit (b) Improvement in how the product is displayed to the customers (c) Showcasing all possible design elements of the garment (d) Feel and touch of the garment. Virtual fitting room solution will help boost the profitability of online apparel retailing by enabling to overcome the "FIT PROBLEM". Virtual fitting room solution can show how the garment will fit a customer; the virtual fitting room solution can also show how the different sizes of garments will fit their specific size and body shape. First the robotic mannequins are built and then photographed at high speed in thousands of permutations of body shape, while dressed in a retailer's key garment's, in each available size. Then, on the retailer's website, software is able to display for online shoppers the key garment pictures that correspond to their body size and shape after asking

for just a few basic measurements. Knowing exactly how the clothes they are looking at are going to fit will give a huge boost to visiting customers. The assurance of fit will give customers the confidence to buy and can be expected to improve conversion rates and decrease returns. The apparel E-commerce industry can really blossom if a technology solution to the virtual fit room is found and thereafter this model of commerce will be as good as bricks-and- mortar, if not better and more profitable.

Keywords: Virtual fitting room, robotic mannequins, bricks and mortar

INTRODUCTION:

The problem of “FIT” is not as simple as descriptions, or numbers or sizing: it’s an emotional decision about which size someone perceives as looking good on them. Some people want to wear a particular shirt closely fitted, while another person may want to wear the same shirt but wear it large. A traditional size chart does not work this way. Fundamentally, a size chart recommends one ‘optimal’ size and takes no account of personal preferences. Where online retailer has no virtual fitting room, the shopper is required to make a best guess at the size that will give them the fit they require. The first thing to note is that many buyers hesitate at this point, and this is why conversion rates remain so low for online clothing retailers. But the lack of a fitting room in online an essential part of a clothing store and it is not only the reason why people hesitate when buying clothes online, it is also the reason for high ‘return rates’ of clothes too. Inevitably, of those that do click ‘Buy’, many of them find the receipt of the item that their best guess was incorrect. Returns impact somewhere between 15% and 50% of apparel e-commerce sales (depending on factors such as the type of item and the return policy of the retailer involved), and are accepted as averaging around 25%. About 70% of garment returns are because

the clothes didn't fit as the customer expected (or hoped) [2]. A virtual fitting room solution can help boost the profitability of online clothing retailers by enabling them to overcome the "Fit Problem". A virtual fitting room solution can show how the garments will fit the customer. It can even show the customers how different sizes of garments will fit their specific size and body shape.

VIRTUAL FITTING ROOM:

- The goal is to enable everyone to see how clothes will fit on them.
- A size chart is created (it contains a list of all the combination of different body parameters for which photographs have to be taken for a particular garment of a particular style and size).
- A robotic mannequin, that contorts to different body shapes, is introduced, on which garments are put according to the size chart created.
- A considerable number of photographs, covering all the angles, have to be taken for each garment and size, so that when customers enter their measurements in the online virtual fitting room, they'll see a photograph of the robot with their measurements, wearing the garment they've chosen, in the size and style that they've chosen.
- The consumer can see, right on the screen, how the garment will look on them— where a collar will be too tight, or sleeves too short, or where a shirt won't button across a waistline, or a jacket won't zip across the width of a chest—as well as how the fabric drapes.

DEVELOPMENT OF APPLICATION:

- The software can be developed and hosted on the cloud and any system, having an internet connection, irrespective of the operating system should be able to access it.

- o The application can be developed using website development and designing languages viz, php and JavaScript.
- o The application can use an internal database (e.g. MySQL) which will contain all the pictures and required attributes.
- o The application can be uploaded online using WAMP Server.

METHODOLOGY:

Chart Size: Decide the size chart which will contain all the combinations of sizes and its different parameters for which pictures will be clicked and a database will be created. If the size is small for a men's wear and the chest measurements are 34, with the chest as 34 we look at all the possible waist combinations.

Table-1 for size (S) chest 34 and chest 35 and all the combinations

Size	Chest	Waist	Size	Chest	Waist
S	34	30	S	35	30
			S	35	31
S	34	31	S	35	32
S	34	32	S	35	33
S	34	33	S	35	34
S	34	34	S	35	35
S	34	35	S	35	36
S	34	36	S	35	37
S	34	37	S	35	38
S	34	38	S	35	39
S	34	39			

Robotic Mannequins:

After the size charts have been created, the next step is to set the robotic mannequins to the given size combination and place the garment over it. Once the garment of smallest size is put over the mannequin then photographs are clicked for the front and the back to depict the fit and the drape for all possible combinations of chest and waist. The process is repeated for the subsequent sizes of garment until all the combinations are covered.



Figure-1: Robotic mannequin

Creation of Database:

A database is created and populated with all the size combinations along with the photographs clicked and stored in the cloud. An algorithm is created to check if there were size specifications given as an input; does that size combination exist in the database? If yes then the algorithm displays the photograph from the database that corresponds to the input given as body size and shape.

Table-2 Database table for size (S), chest 34 and all the combinations for the waist and the photographs clicked

Size	Chest	Waist	Picture-number
S	34	30	S-34-30-front
			S-34-30-back
S	34	31	S-34-31-front
			S-34-31-back
S	34	32	S-34-32-front
			S-34-32-back
S	34	33	S-34-33-front
			S-34-33-back
S	34	34	S-34-34-front
			S-34-34-back
S	34	35	S-34-35-front
			S-34-35-back
S	34	36	S-34-36-front
			S-34-36-back
S	34	37	S-34-37-front
			S-34-37-back
S	34	38	S-34-38-front
			S-34-38-back
S	34	39	S-34-39-front
			S-34-39-back

The customer can see, on the screen, how the garment will look on them— where a collar will be too tight, or sleeves too short, or where a shirt won't button across a waistline, or a jacket won't zip across the width of a chest—as well as how the fabric drapes.

Virtual Fitting Room Solution For Customer:

The online customer will be asked to provide a few key body measurements. If the customer doesn't know their measurements, the customer would be asked to measure with proper instructions provided on how to measure? The customer will enter the few measurements like waist, chest and collar size.



Figure-2: Measurement

The software will create a virtual image of the customer and will also suggest the size depending upon the type of fit the customer is looking for.

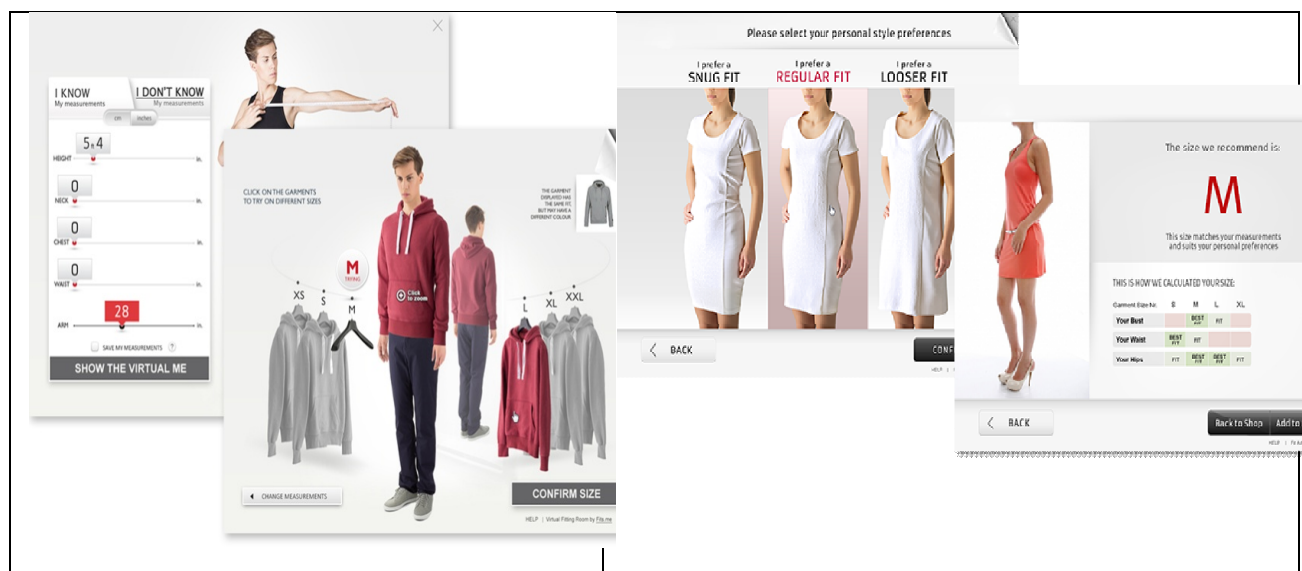


Figure-3: virtual mannequin and the selection of fit.

The software will ask the customer to choose the garment he/she would like to try.

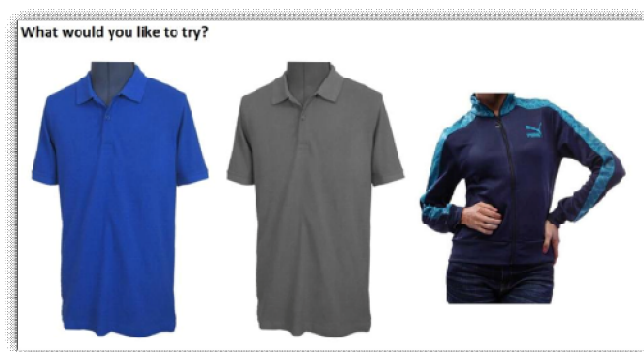


Figure-4: Customer can choose the garment from various options to try on

When the customer provides all the details on the retailer's website, the virtual fitting software hosted on the cloud will enable the customer to see exactly how the garment the shopper is looking at, will fit their body size and shape. The customer can pick other sizes and also check the fit and the drape; the software will provide the customer with necessary information about best size, his/her choice of size and other available

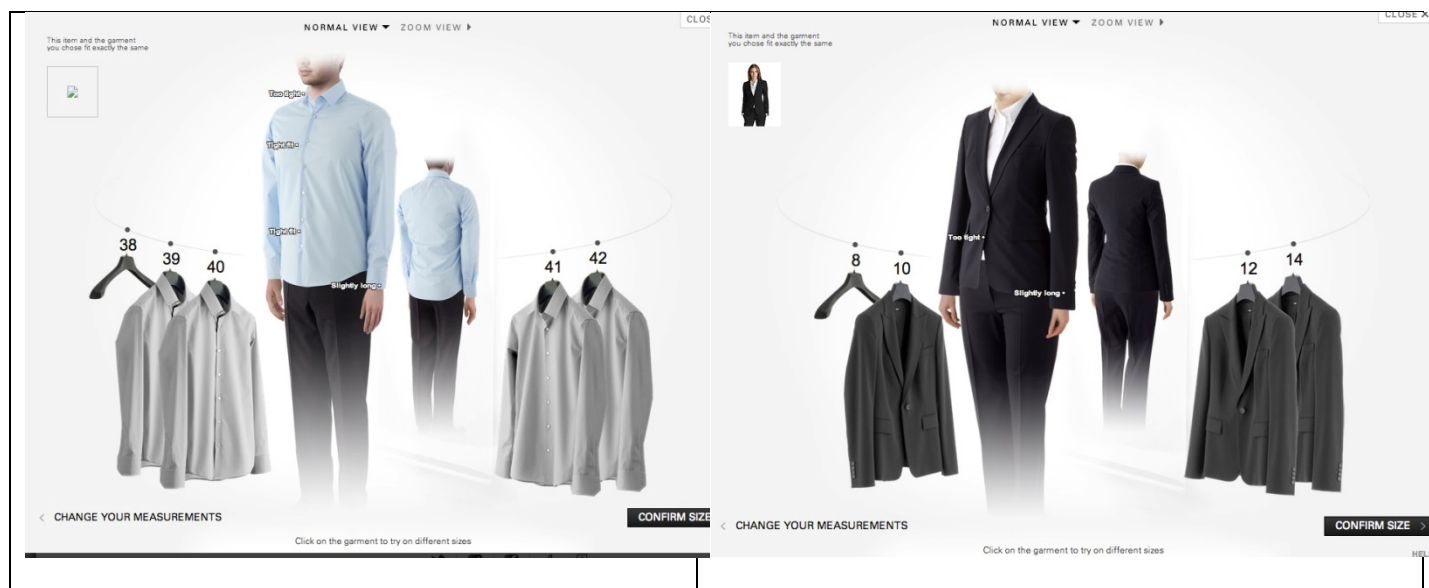


Figure-5: Virtual fitting room solution

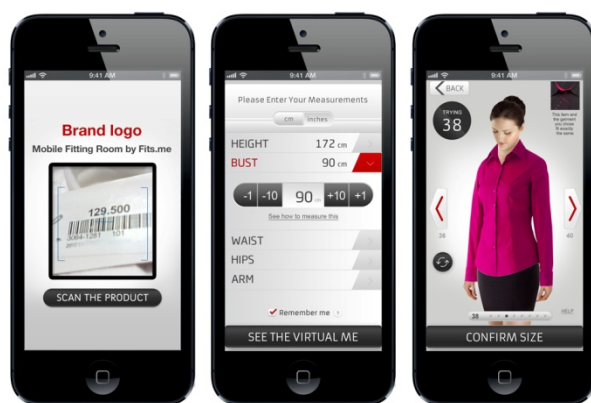


Figure-6: The software solution - fitting room experience on a mobile device

CONCLUSION:

The use of real photographs rather than computer-generated imagery, taken of production-grade garments, on the robotic mannequins, ensures that the Virtual Fitting Room eliminates any guesswork by the shopper about whether a particular garment size meets their individual sense of fit. The virtual fitting room solution provides customers with a photo-accurate visualization of fit. It delivers the in- store fitting room experience online and on mobile devices by displaying a real photograph that shows exactly how the garment the customer is looking at will fit on their body

size and shape. Research suggests that mobile virtual fitting room solutions designed specifically for smartphones and tablets will be popular, especially with younger, mobile-centric shoppers: 41% of 18-34 year olds report they will happily use a virtual fitting room solution from their mobile device in a store if the queue to the bricks-and-mortar fitting room is too long. For retailers, the app effectively counters 'show rooming' – the practice of checking out a garment in-store and then buying it online at the cheapest possible price – by motivating shoppers to buy an item 'right then and there', concluding that particular purchase journey

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