



# To develop a tool / device which will give the virtual fabric feel on computer screen?

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## Abstract

The twentieth century has given birth too many inventions. Ecommerce is one of them which have created a revolution in the field of fashion retail merchandising. Today rate of return is the big challenge for the ecommerce fashion industry. To overcome this challenge need to develop virtual system through which customer feel fabric on screen before making purchase. From simple store purchasing today one can do online purchasing according to our need and desire with his/her comfort. These introductory paper put the good solution for ecommerce industry and explain how increasing purchasing power of potential and target customer.

## Introduction

Ecommerce or electronic commerce, deals with the buying and selling of goods and services, or the transmitting of funds or data, over an electronic platform, mainly the internet. These business transactions are categorised into either business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer (C2C), consumer-to-business (C2B) or the recently evolved business-to-business-to-consumer (B2B2C). Ecommerce processes are conducted using applications, such as email, fax, online catalogues and shopping carts, electronic data interchange (EDI), file transfer protocol and web services and e-newsletters to subscribers.

The Ecommerce sector has seen unprecedented growth in 2014. The growth was driven by rapid technology adoption led by the increasing use of devices such as smartphones and tablets, and access to the internet through broadband, 3G, etc., which led to an increased online consumer base. Furthermore, favoured demographics and a growing internet user base helped aid this growth. In terms of highlights, the growth shown by home-grown players such as Flipkart and Snapdeal and the huge investor interest around these companies displayed the immense potential of the market. With the entry of Ecommerce behemoths such as Amazon and Alibaba, the competition is expected to further intensify. Both these

International players come with deep pockets and the patience to drive the Indian Ecommerce market. Also, their strong domain knowledge and best practices from their international experience give them an additional edge. Additionally, these companies have been part of markets where they have seen the Ecommerce market evolve and are aware of the challenges and strategies to address issues thereof.

Indian companies realise this, and are therefore aiming to continue their focus on expanding sellers and selection on their platforms, innovating on multiple customer touch points, and providing seamless and rapid delivery services in order to compete with the international entities. Competition is expected to continue, with these Ecommerce companies experimenting with different ways to attract customers.

India's overall retail opportunity is substantial, and coupled with a demographic dividend (young population, rising standards of living and upwardly mobile middle class) and rising internet penetration; strong growth in Ecommerce is expected. From an investment perspective, the market is a primarily minority stake market, with maximum traction in early-stage deals. Such early stage funding will help companies develop a strong foundation to start from. With such strong market prospects and an equally upbeat investor community, we look forward to many more Ecommerce companies from India entering the coveted billion-dollar club.

In India e-commerce portal have boosted sales of regional apparel. Right from special variants of ethnic wedding dresses to traditional costume, the onset of shopping in the digital age has brought India's handicraft heritage into limelight (Jain 2017)

In spite of the significant growth in online clothing sale, return rates for clothing purchased over the web are the highest of any online retail sector. Return rates for online clothing purchases range from 14-50% depending on the style and how fashion-forward the item is (Barbaro2007)

There are many reasons for return of garment purchased online. One of the reasons is fabric feel. Many times online purchase are giving the reason of return that the garment which is delivered to them do not have the feel which they expecting. And many people's are hesitating purchase online because then cannot touch and feel the garment online.

## **Purpose of the research**

The essence of e-retailing is in its ability to transcend physical boundaries and reach customers in a manner different from the traditional brick-and-mortar store. Indian Ecommerce has big potential for development in India. On other hand many brands and companies perform well in the market. Digitisation is the boon of 21<sup>st</sup> century and we want to create something unique which motivate customer for online purchasing. Technological up gradation is the sign of competence and development. One of the drawback of the online purchase is that the consumer cannot touch and feel the fabric online. If tool or device is developed which will give the virtual fabric feel online, it will definitely boost the online apparel industry. Therefore overall purpose of the research is to develop a tool / device which will give the virtual fabric feel on computer screen.

## **Objective of the study**

- 1.To identify the factors responsible for feel of fabric.**
- 2.To develop a hardware programme for virtual fabric feel .**
- 3.To develop a software programme for virtual fabric feel.**
- 4.To develop interface between software and hardware.**
- 5.To test the tool develop for virtual fabric**

## **Need of the study**

The new technologies, especially mobile, in India have sparked a social change that's difficult to quantify. While mobile, internet, and social media penetration and growth can be quantified; describing the changes in social values and lifestyles that have accompanied those trends is far more challenging. New technologies such as virtual walls and virtual mirrors will further help improve the retail customer experience, thereby encouraging greater consumption. Virtual mirrors let shoppers 'try on' clothes and accessories virtually before making buying decisions. Virtual walls help customers scan barcodes for items on an electronic wall using their mobile phones and place orders with retailers. Tesco in South Korea was an early adopter of this technology. In India, HomeShop18 has launched India's first virtual-shopping wall. Scan N Shop at New Delhi's international airport uses a similar technological interface. A key outcome of the technology revolution in India has been connectivity, which has fuelled unprecedented access to information. Millions of people who had little means to join the national discourse can now gain new insights into the world around them. Farmers know crop prices. Consumers understand global standards of product and service quality. Rural Indians recognise the differences between the

opportunities available to them and those available to their urban counterparts. And citizens have a mass forum for expressing their political opinions. The upshot of this connectivity revolution has been empowerment of Indians.

To meet the globalize competition and challenges we want to empowered our customer and business by developing virtual device/tool which may be gives the realistic feeling of fabric texture and touch while making decision of online purchasing of fashion apparel. I think this is very exciting experience for the apparel fashion industry and such type technology advancement is the need of present and future dynamic digital apparel fashion world

## Methodology of the study

### Introduction

The “hand” of fabric refers to the “feel” of the fabric against your skin. There are many adjectives that can be used to describe the hand or feel of a fabric. Words like cool, slick, loose, stiff, heavy, and stretchy can all be used to tell someone about the hand of a fabric. The feel of the fabric depends on many factors like type of fibre, type of yarn, type of fabric, fabric finishing process etc.

The number of various existing fabric materials for different usages is unlimited. Therefore it is important to judge each textile material regarding quality and suitability before any manufacturing process. Related fabric characteristics can be subjectively assessed or objectively measured. A new field of research tries to imitate the subjective fabric evaluation method by virtually simulating the touch of fabrics with new haptic and tactile technologies. However, the today existing technology does not allow the rendering of complex interactions between hand and fabric, as it occurs during the real assessment method. Thus, the subjective fabric evaluation needs to be simplified to allow a direct comparison of the real and the virtual process. The main difference of the traditional subjective assessment, where the fabric is touched with both hands, to the simplified one lays basically in the fixation of the fabrics, so that the specimen can be judged with two fingers. The main mechanical properties such tensile, shear, bending, compression, friction, surface and weight have been assessed with the new test arrangement. The results of the assessment have been reported for all tested properties.

Fabric feel is the quality of the fabric assessed by the reaction obtained from your sense of touch. It's a person's estimation when feeling fabrics between your fingers and thumb. Determining fabric hand is a combination of physical, physiological, and psychological factors. The physical factor is the fabric. The physiological factor is the touch or stimuli that are perceived by your hand. The psychological factor is your brain processing the stimuli and giving you a response. The challenge our industry faces with measuring fabric hand is that everyone perceives things differently

Following are the factors responsible for feel of the fabric

In textile products the basic elements that can fundamentally affect fabric handle are given below. All these characteristics have an interacted relation in terms of the mechanism of influencing sensorial comfort of the end product. Namely, yarn handle characteristics are the results of the fibre properties and similar relationship can be observed between yarn and fabric features.

1. Fibre characteristics: Material type, morphological structure, fineness, length, friction property, resilience, compressibility etc.
2. Yarn characteristics: Yarn type (staple fibre, continuous filament, textured), linear density, twist etc.
3. Fabric characteristics: Production method (woven, knitted, non-woven), fabric construction, weight, thickness, surface roughness, structure, yarn density etc.
4. Method and type of dyeing and finishing processes (heat treatment, brushing, calendaring,

Softening, etc.

### 1 Effect of fibres

The finer the fibres are the smoother and more flexible the yarn is and the fabric drape gets better. Longer fibres and smaller variation in the fibre length distribution result in smoother yarn and fabric surfaces. Micro denier filament fabrics give a better drape and handle properties compared to the normal denier filament fabrics. The cross-sectional shape of the fibre affects the smoothness and bending of the yarn. It also determines how light interacts with the fibre. For example, a round fibre will appear more lustrous than a trifocal fibre made of the same polymer. Another property that is important for fabric handle is the fibre friction. The fibre-fibre friction influences the way that the fibres interact with each other. The friction properties affect the flexibility of the yarns. Crystalline also affects the handle of the fabrics by influencing the way that the fibres move and respond to bending. If the molecules in a fibre are aligned along the fibre axis, the fibre will be strong in uniaxial tension along the fibre axis. A more crystalline fibre is more resistant to bending

### 2 Effect of yarns

The twist of the yarns which the fabrics are made of, is one of the main parameter affecting the fabric behaviour including bending, stiffness and shearing property. The amount of twist, together with the characteristics of the fibres (lustre, hand, cross-sectional shape, etc.), determines the appearance and feel of the yarn. Fabrics composed of yarns with higher levels of twist are known to have higher bending stiffness, less compressibility, less fibre mobility, lower surface friction, less bulkiness than similar fabrics composed of yarns with less twist. Increased yarn twist leads to greater internal (fiber-to-fiber) friction within the yarn structure and reduce softness and bulkiness, in general, and hairiness in the case of spun yarns. Another factor affecting handle is the number of the yarns folded. In plied yarns, i.e. two or more single yarns twisted together, the stiffness is increased compared to single yarns. Filament yarns are sometimes put through an additional process known as texturizing. The process modifies the handle of the filament yarns by adding bulkiness and/or stretchiness to the filaments and therefore changes the smooth surface feel of fabrics. The feel of textured-yarn fabrics against the skin is considerably different than that of flat-yarn fabric. Textured yarns give a fabric more pleasant hand, fabric becomes warmer and softer and it has less synthetic feeling. Fibre linearity and fibre-packing density in yarn structures are also important for the tactile qualities of a fabric, when not masked by twist yarn is thicker, softer, of poorer recovery from compression, less rough and less stiff

### 3. Effect of fabrics

The handle of the fabrics is affected by mainly fabric structure and fabric geometry. Fabric construction and yarn density. Variations in warp and weft densities and in the number of warp and weft yarns have significant effects on the handle characteristics of the fabrics. Sensory analysis shows that fabric hand can be influenced more by fabric weave than by the component yarn. Weaves that use fewer yarn interlacing improve the handle characteristics of the fabrics.

### 4 Effect of finishing

There are many researches in the literature related with the effects of finishing process on sensational properties of the fabrics. The diversity of fabric types with finishes available for any end-use continues to increase, making the selection of the most appropriate fabric an increasingly difficult task

. Fabric basic properties affecting sensorial comfort Fabric handle is related to the basic mechanical properties of fabrics, especially initial low stress region of those properties. Since the stresses involved in fabric handling are low compared with those applied in other types of textile performance testing (e.g. for ultimate tensile strength, tear strength, seam strength, etc), the methodology is sometimes referred to as measurement of "low-stress fabric mechanical and surface properties" (Bishop, 1996). The stimulation of the feeling sensors greatly depend on the mechanical properties of the textile products, for instance a lower value of bending rigidity supports the positive impression of sensorial comfort. The main mechanical and surface properties of fabrics that influence the sensorial properties of fabrics are tensile, bending, shearing and thickness.

Tensile properties of woven fabrics Tensile properties are one of the most important properties governing the fabric performance during usage. Each pieces of fabric consist of large quantity of fibres and yarns, and hence any slight deformation of the fabric will lead to a chain of complex movements among these constituent fibers and yarns (Hu, 2004). There are three stages for the extension mechanism. The first part is dominated by inter fiber

friction that is the frictional resistance due to the yarn bending. Second part, a region of lower modulus, is the decrypting region resulting from the straightening of the yarn set in the direction of application of load, with the associated increase in crimp in the direction perpendicular to the yarn direction. This is commonly referred to as “crimp interchange”. www.intechopen.com Sensorial Comfort of Textile Materials 241 The last part of the load extension curve, is due to the yarn extension. As the crimp is decreased, the magnitude of the loading force rises very steeply, and as a result, the fibers themselves begin to be extended. This is clearly a region of higher modulus (Figure 2a). If the fabric undergoes in a cycling loading process, the fabric is first stretched from zero

### **Bending properties of woven fabrics**

Bending properties of fabrics govern much of their performance, such as hang and drape, and are an essential parts of complex fabric deformation analysis. The bending properties of a fabrics are determined by yarn bending behaviour, the weave of the fabric and the finishing treatment of the fabric, the relationship among them are highly complex . Two parameters that characterize the fabric bending behaviour are its bending rigidity and bending hysteresis.

### **Shear properties of woven fabrics**

The shearing behaviour of a fabric determines its performance properties when subjected to a wide variety of complex deformations in use . The shear mechanism is one of the important properties influencing dapperness, pliability and handling of woven fabrics.

### **Thickness and compression properties of woven fabrics**

Thickness and compressional properties of the fabric are very important characteristics in terms of fabric handle, especially for the fabrics used in garment manufacture. Fabric compressional characteristics depend on several factors like the compressional properties of the constituent warp and weft threads and the structure of the f. The thickness of a fabric is one of its basic properties giving information on its warmth, heaviness or stiffness in use.

## **2. Developing Hardware**

This project will require the assistance of the hardware which may be the sensing globes which passes the massage of feel and touch to the brain.

## **3. Developing software**

For develop a device for virtual fabric feel a software is also required along with the hardware . To use basic and advance information related to the textile fiber, yarn, and fabric as input.

## **4. Interfacing**

Interfacing is a shared boundary across which two or more separate component of computer system exchange information. The exchange can be between software, computer hardware, peripheral device, humans and combination of these. We may interface our software and hardware device with wire or without wire

## **5. Testing**

After developing the software we have to test the working and functions. system testing takes ,as its inputs , all of the “integrated” software component that have passed integration testing and also the software system itself integrated with any applicable hardware system.

The purpose of integration testing is to detect any inconsistence between the software and hardware.

## 6. Implementation

We think that this tool may be implemented in various places such as apparel retail shops, business to business, business to consumer.

### References :

- 1 <http://alittleddesignhelp.com/what-is-the-hand-of-a-fabric>
2. Jain Hemant “Role of e-commerce in apparel industry”  
<http://www.fibre2fashion.com/industry-article/751/role-of-ecommerce-in-apparel-fashion>
3. Barbaro, Michael “ clothing sales make big troads on the Web. “www.nytimes.com14 may 2007. web 1 jan 2011”
4. Indian Journal of Fibre and Textile research vol.19.September 1994 pp 168-171( B. K. Behra & P. K. Hari)
5. [https://www.cordis.europa.eu/project/rcn/72298\\_en.html](https://www.cordis.europa.eu/project/rcn/72298_en.html)
6. e-commerce in India : drivers and challenges. The PVC India proposition
7. KPMG.com/in
8. Evolution of e-commerce in Indian Creating the bricks behind the clicks by PWC India
9. E-Commerce: Challenges and Opportunities By Ms. Bijal N. Zaveri
10. fiber2fashion all articles related to e-commerce
11. <https://www.freepdfconvert.com/membership>
12. [https://www.cordis.europa.eu/project/rcn/72298\\_en.html](https://www.cordis.europa.eu/project/rcn/72298_en.html)

