

Abstract:

For most of us living in Bangladesh, the idea of the fashion is dear to all. When we speak on fashion we usually think of a fun and frivolous word of beautiful people in exotic, often un-wearable sandal or shoe and that's all. We viewed the word of fashion as entertainment.

But now fashion is not entertainment or funny matter. It's now a need. You should be fashionable or at least aware about the current fashion. Otherwise you will be treated as an unsmart guy. Do you want to be ?

By this project work, the fashion of the ladies sandal will be observed. The materials that are commonly used to make sandal are sometimes used only for functional ways. The use of leather is a very traditional way and it has a great functional property. But this project tries to prove that materials not in common such as leather also have a very aesthetic look and also fulfill the functional requirement.

This project compares the uncommon materials with the common one. The denim cloth or gunny bag or velvet cloth could be the alternative of the leather, synthetic materials, not in a functional way but in a fashionable way.

In preparing this project, I have tried to study the overall design situation of the world ladies sandal trends and of course from a Bangladesh point of view. I have studied the materials which are not common in footwear manufacture especially on ladies items. The term 'fashionable' makes me more flexible on this issue. I have tried to change the thinking pattern on the ladies sandal.

Part 1

Introduction

Introduction:

Did you know that a lot can be told about a person's personality simply by the shoes they wear? Even the way they walk can be an indicator of what they are like as people. Some people walk fast, some people slow like annoying near sighted drivers while others like to walk in rhythmic movement with certain body parts sashaying. It tells whether or not the person is an anxious nervous wreck waiting to jump off a roof, or a cool-as-cucumber individual.

Shoes just tell where your tastes lie. Often you will see someone decked in the fanciest cloth but the feet are clad in dirty torn shoes. It works only if you are a Hollywood star. Some can't be bothered as to what link shoes have to looking good. Just about anything seems to go whether you go to office, market or parties. Casuals and formals can be just terms that are thrown about but not necessarily mean anything. Sure such disregard may not harm the feet but the image sure takes a beating.

Shoes are so important that these have been central props in fairy tales and mythologies. The Greek god Mercury had winged shoe that allowed him to fly and run at the same time at breakneck speeds. Then there was an old lady who used to live inside a giant shoe. That old lady must have been spending a fortune on air fresheners though.

Shoes are also a symbol of luck. That's why you will see that in many countries it is a ritual to tie a string of gold shoes behind the car of the newly weds. Poets like Rabindranath have eulogized the footwear in a poem titled "Juta Abiskar" (Invention of the shoe).

Aims/Objectives of the project:

The objectives that desired by the project are-

1. Studying about the fashion trend of the ladies sandal.
2. Range building of fashionable ladies sandal line.
3. Finding the alternative materials and components for the ladies sandal manufacturing.
4. Comparing the materials in vogue with the materials using in common ladies sandal making.
5. Manufacturing of the fashionable ladies sandal.
6. Studying about the quality of the fashionable ladies sandal.
7. Studying about the costing of the ladies sandal by using materials in vogue.

Methodology

For the simplicity of the project work, I divided my project work into four part. These are-Unit A : Observation of the fashion trend. Unit B : Range building of the fashionable ladies sandal Unit C : Manufacturing of the ladies sandal.

Unit D: Making costing and quality control of the product made by project.

Terminology used in the project

Counter - a piece of cup shaped stiff material placed in the back of the shoe between the outer leather and inner lining to help hold the shoe's shape.

Eyelet - the holes that shoelaces go through.

Heel - the bottom part of the shoe that provides elevation. **Heel Types:** Quality heels are made from leather often reinforced with rubber or metal tips.

Hobnails - iron nails nailed through the soles of shoes or boots to keep the footwear together and to prevent the soles from wearing out.

Insole or (innersole)-- A layer of material inside the shoe, which rests against the bottom of the foot.

Last - from the old English word "laeste" meaning "footprint" it's the form in metal, plastic or wood shaped like the human foot and over which a shoe is formed or repaired

Lining - high quality shoes use calfskin and construct so that it folds smoothly into the seams.

Mid-sole - a buffer layer of material between the out-sole (sole), and the insole, which is used as a bonding layer adding comfort and support to the shoe bottom. This can be leather or cork.

Outsole - the very bottom of the shoe

Quarter - back part of the upper that goes around your heel

Shank - The narrow part of the shoe under the arch of the foot and/or the piece of leather or metal inserted into this area between insole and outsole to give strength to the arch.

Sole - the bottom part of the shoe under the foot consisting of the out-sole, mid-sole and innersole (or insole). From the Roman "solea" used to describe early forms of slippers and sandals. Look for stitching not glue in quality shoes.

Toe box - the space insjde the shoe for the toes

Tongue - part of the upper on an oxford shoe, which lies directly under the laces.

Upper - all parts of the shoe above the sole (includes the counter, quarter, vamp and lining), attached to the insole.

Vamp - not a seductive lady from silent movies, but the upper middle front part of the shoe upper. It covers the instep and toes. The word originally was "vamprey" from the 15th century.

Welt or welted sole - the method of stitching a piece of leather to the shoe upper lining and insole before being attached to the outsole with the seam concealed.. It allows your foot to flex and permits the shoe to be resoled easily. Welt is also the term for a border around the edge of a garment either for decoration or to reinforce an edge.

Symbol used in project

A board spectrum of materials and their combination are used today in shoe manufacturing. Leathers, synthetics, rubbers and textile materials are counted among the basic upper materials. Each material has its own specific character. They differ not only in their appearance but also their physical qualities. Material significantly influences the life of the footwear and in many dictates its use.

Part 2

Footwear Basic

Footwear & Sandals!

Footwear consists of garments worn on the feet. It is worn for a variety of reasons, including protection against the environment, hygiene and adornment. Often times, socks and other hosiery are worn under footwear. Footwear is sometimes associated with fetishism, particularly in some recent fashions in shoes and boots.

Sandals are an open type of footwear. Espadrilles are a kind of sandal. Related are **mules** and flip-flops. The latter can only be worn with bare feet or special socks. They can be made of rope, rubber, leather, wood (as in clogs or geta) or tatami (as in zori).

It is said that the New Zealand expression "jandals" for rubber sandals often used at the beach and called "thongs" comes from the expression "Japanese sandals." This is derived from the shape of jandals being similar to the Japanese "zouri," basically a rubber sole piece held on to the foot by two cloth thongs extending from the inner and outer side of the foot to the gap between the big toe and the second toe. This construction for footwear used to be the norm in Japan before westernization of clothing, with "geta" (wooden sole raised with one or two horizontal wooden pieces and attached to the foot with cloth thongs), and "warabi" (sole woven from straw with straw or cloth thongs, and sometimes extra ties over the foot and around the leg, often used for travelling).

Basic styles of footwear

According to Rossi (1993), there are eight basic styles ie the sandal, the monk, the moccasin, the mule, the clog, the pump, the boot and the lacing shoe.

Boot

Originally these were shoes with wrap around leggings and date back approximately 4.5 thousand years. Later when the leather leggings resembled a bucket, the French called them 'butt' meaning water bucket. These evolved into boots and finally boot. Over the centuries boots have undergone many changes and been gendered for their troubles. Boots as a fashion invariably follow war and represent coping with threat. Certainly the most contrived style are cowboy boots which have little to do with real Wild West and more to do with Urban macho wannabes. The cowboy boot invokes heroic myth of the west, which promulgates rugged individualism, independence, quiet strength, and alienation from civilisation. They are a sign of authority and suggest strength by adding stature and stability. A boot's snug contact with pressure sensitive Pacinian corpuscles of the lower leg provides tactile

reassurance while supporting the long tendons that run to the feet. Boots stabilise the ankle. Research has shown women find men in cowboy boots more attractive. Highly decorated boots express the gentler feminine side of the narcissistic wearer who may be rather superficial but always entertaining, if only for a short time. Boots with pointed toes indicate intense ambition. Whilst the suave and sophisticated sharpie may give out assured confidence and good humour that is as much as you are likely to get from them. The fashion for sharp toes can be traced to the resurgence of paganism and in particular a celebration of Pryapus. Men challenged by the absence of height prefer high heels. Wearers of biker's boots appear control freaks. No surprise there. This who sport elasticised boots may be free spirits who enjoy the simple comforts in life. Modern guys prefer the Yellow Suede, Hiking Boots, suppressed machismo, emaciated by modern day domesticity. Most will lack adventure in their lives but have four wheel boots to show they are ready (if not always willing). Doc Martens lacing boots are the mark of natural loners who may not seek close relationships. Many have leadership qualities with b commitment to passionate causes. The physiological benefits of boots may give feeling of security on the street. According to Australian journalist, Jane Fraser, I boot (sheepskin boot) is to the foot what Vegemite is to the tongue, what maroo to a Queenslander, what 'haitch' is to a Catholic. What she might be surprisec learn is elsewhere in the global village creative souls designed for success but t of convention, wear Ugg Boots. This makes them a personality, which is t unpredictable and capable of the unexpected. The fashion boot without doubt given liberated women freedom style and support. Not to mention a lot of pleas to men.

Clog

Clogs describe wooden soled shoes traditionally worn by peasants more recently associated with Scandanavia. Two basic types are the sabot wooden shoe) and the more fashionable clog (wooden soled shoe with a lea upper). Clog wearers are considered complex and intriguing characters usually i types with a strange and difficult past that will leave you better for knowing 1 One clog devotee is Brian May of Queen. Once a doggie then always a doggie, o it seems. Many men are turned onto clogs by seeing well turned ladies wea them. Some are even attracted to the noise the clog makes. Hence there are a Ic closet clog wearers out there.

Lacing Shoe

Lacing shoes were introduced in the seventeenth century in England. At first they were thought to be rather effeminate but later took a fashion

hold when fops at Oxford University wore them in the eighteenth century. The Oxford shoe became a foot corset designed to highlight the curves of men's feet. Worn tight to the foot the shoes were smaller than the foot and always with a heel. This meant the man minced which became accepted norm for real men. Corn cutting became a popular service during this time. It took until the nineteenth century before the fashion crossed the Atlantic and came with English invasion. This movement would influence adult costume for the next half a century. To accommodate broader feet Bluchers were adopted and lacing shoes become synonymous with conservative dress attire for both men and women. Patent Leather was developed in the thirties as a waterproof material for shoes. Now solid dependable types, stalwarts of community, wore lacing shoes. Not without its irony and despite their origins lacing shoes are classified as eunuch shoe for men, and sexless or comfortable footwear for women. The later is a euphemism for lesbianism. According to Rossi people who wear lacing shoes wish to voluntarily withdraw from natural concerns of sexual attraction e.g. funeral directors, paramedics, and nurses. Non conformists may wear brogue patterns or two-tone uppers indicating a psychosexual masquerade with the masculine costume smothering the peacock inside. Jack Kennedy was a man who preferred high fashion in footwear but conformed for his public image. Neuter shoes are neither sexy nor sexless neither fashionable nor non-fashionable. They exhibit a glimmer of promise at first inspection, but on a closer look are found wanting, i.e. an eunuch like quality. A conservative fashion with medium to low heel, semi-rounded toe, closed rather than open toe box. The colour subdued, the materials conventional and the ornamentation, if any, minimal. Passive styles for psychosexually passive people (Rossi, 1993). The sandshoe which is a canvas Oxford was an invention of the 19th century and although had humble beginnings without doubt heralded the beginning of the most popular footwear of existence. Middle class preoccupation with sport and recreation meant sport kits included dedicated sports shoes. BY the middle of the 20th century they became the icons of youth. Lacing shoes with attitude have become inseparable from youthful rebellion. Sport shoes are now perceived an essential part of ritual garb associated with both the best of being human as well as its darker side. From the time Jimmy Dean endorsed coolness, when he was photographed wearing tennis sneakers to MC Hammer rapped praise on his Adidas sneakers, the sporting Oxford has ruled supreme. People who wear sneakers are not too concerned with their looks but do prize comfort and security over anything else. Wearers of designer

trainers are probably ambitious, motivated and driven in all their endeavours. Their materialistic outlook and competitive nature however puts them under enormous internal pressures. The carefree casual appearance of those wearing bowling shoes (a leather top hybrid) belies a passionate conversationalist who is intensely romantic. These people are often well travelled and strongly opinionated. Traditionalist too self-conscious to be really cool, wear running shoes. These people are not part of the 'in crowd' but would dearly love to be. Large size, bold contrasts, and loud colours suggest youth and physical fitness. Often more theoretical than actual. Identification with team sports (especially star players) are preference for informality and comfort.

Moccasin

The term moccasin originates from the Algonquian language for foot covering. The Algonquians were any of several North American Indian tribes formerly inhabiting the region along the Ottawa River and near the northern tributaries of the St. Lawrence River. The oldest form of shoe dates back to 14,000 years and was thought to originate from the Mongol tribes who migrated along the Bering Strait into North America. Originally it described a simple one-piece hide, wrapped round the foot and held on with rawhide thongs. Later the Indians gradually stylised the moccasin by adding the moccasin plug, fringes and coloured beads, which depicted rank and occupation. Today moccasin shoes usually describe imitation moccasins, which had their origins in Norway. The Norwegian Peasant Slip-on (or weejun) was first imported to the US by tourists in the 1930s and later Gucci made a leather loafer in refined calfskin with a metal snaffle bit across the instep. Soon loafers were available in the spectator style (two colours). By the 50s Penny Loafers were all the rage with the campus Ivy League of the US. Made in ox blood they were also known as the Norwegian slipper. The Low vamp loafer was designed for females and was made from soft kid leather and cut low.

The Mule

Mules or slip shoes started as heelless, quarterless slippers worn in Elizabethan times. Later they became associated with the boudoir and are the ancestors of bedroom slippers, and worn by women of distinction. Richly endowed with silk and velvet these were often heavily bejewelled or highly decorated. During the nineteenth century when Manet's painting of Olympia was revealed to the public it caused a riot. The reclining courtesan was seen playfully holding her foot half in and out

of her mules. The implications were obvious to all. The shoe has enjoyed a recent renaissance with Ath Leisure and has become more popular in the US, post '11/09'. Realisation the shoe could be a weapon, combined with widely broadcast images of discarded shoes left behind as people tried to escape falling masonry had a major impact. Increased security associated with travel, especially by air, has given the mule a new lease of life. The shoe is worn by pragmatists, people who enjoy comfort as well as fashion

Sandal

Certainly one of the oldest and simplest forms of foot covering which date back many thousands of years. Stone Age sandals were a spontaneous invention, which helped protect vulnerable feet from alien environments. Later the spread of trade among Mediterranean countries accounts why sandals became associated with affluence but it took until the Romans before they became robust footwear, worn by the army. The trade of sandal making was almost lost after the Fall of the Roman Empire and only rediscovered in the early twentieth century when the heeled sandal was associated with Hollywoods sirens. Now considered the sexiest shoe women can wear, the 'venez y voir' or come hither look is further enhanced with backless or slings back designs. All in an endeavour to catch 'back interest', that is admiring glances from suitable suitors whose eyes are transfixed on the beauty even after she has passed by. Sexy sandals are subtly erotic whereas bitchy sandals are flagrantly sexual (Jayne Mansfield). Women wearing the former are trying to convey a message, which says they want to be noticed and admired as feminine and sensuous women. According to Eisman (2002), today's male thong wearers may appear crude but beneath this veneer lurks a gentle, wounded soul. Dreamers and hopeless romantics choose Jesus sandals to represent their soulful and gentle personalities. Rough and ready types wear sport sandals similar in the way suburban dwellers drive four wheel vehicles. New Age self assured types exude their inner comfort by choosing reflexology sandals.

Monk

The monk refers to the Wide strap across the instep, which is attached to a buckle. The shoe was worn originally by Alpine monks in the 15th century and later caught a fashion following when ornate buckles took on the guise of shoe jewellery. Wearing them was a mark of prosperity and once again the prerogative of men. After the French Revolution, highly decorated shoes indicated social status and buckles soon

became passe as the fashion for boots took over. Buckles meantime became popular with women's shoes. Today they survive in the most mundane form as fastenings for sandals and casual shoes worn by men and children. The monk style of shoe remains a male preserve and is worn by non conventional types assured in their mind their alternative retaining medium is an able match to the more predicable lacing persona. Men who wear peacock buckles are less sexually aggressive, more flamboyant, brazen, and ostentatious. Insecure types with a driving need for personality identity. However don't be fooled the flash exterior is superficial and under the surface lies a soft caring side to their nature, according to Eisman (2002).

Pumps (Court Shoes)

The plain seamless pump started life as a heel-less shoe worn indoors, it was a slip on which did not extend beyond or above the vamp and quarter top nes, held onto the foot without a fastening, although later a wrap around strap like ballet slipper was used. In the UK the pump was known as a court shoe. By the ineteenth century the slip on pump had become sophisticated worn by both men nd women. A low front pump deliberately tantalised by exposing suggestive toe eavage. When dandy Count D'Orsay introduced a pump style which was low cut on le sides to expose the curve of the long arch and the sinuous movements of the ot the shoe took on extra sensual components. The sensual trifecta was jmpleted with the addition of higher heels. By the thirties daytime shoes were neat id feminine-looking with oval toes and straight, high heels. The classic court shoe 3s an everyday basic but the new look slender heeled sandals with ankle and T raps in reptile skins, soft kid, and suede and satin were very much the desire of ost. Shoes were immaculately presented matt fabrics were always well brushed id leather buffed to a high gloss. Strappy designs were more evident in the more sgant evening shoes. The straps were sometimes plaited or made of satin ribbon id crossed over like ballet pumps. Other styles were dotted with glitter and stened with fancy gold, silver or diamante buckles. The sides and heels of the oes were sometimes decorated with tiny gold flecks or diamante tips. Gold and /er 'Charleston' sandals were very popular and a ready accessory for eveningwear. her shoes were covered with fabric to match a particular dress; alternatively 2sses in plain velvet satin or chiffon were worn with patterned shoes, making *tty high-heeled sandals covered in eye-catching, glittering brocade. Hollywood ed two types of women's shoes i.e. the high heeled pump which always looked imorous despite its inappropriateness to the many

action scenes the heroines re depicted wearing them; and the thin strappy sandal as worn by Hayworth, Garbo and Davis represented a willing partner to seduction. Screen beauties rarely forsook these stereotypical props and when they did it became a memorable event. Being filmed in anything else could only add further charm to their existing persona. The origins of heeled shoes probably came from shepherds tending their flocks on steep mountainous country in Pre Hellenic Times. As trade spread across the Mediterranean the elevated sandal became a fashion vogue for rich and powerful men. Later elevated shoes were worn by actors and streetwalkers. The fashion heel for women ironically came in the sixteenth century after a short fling with platform shoes. Chopines were worn by Venetian women of substance both to celebrate the leg as well as (and probably more importantly) to display the sumptuous clothing of the times. Reported falls (or miscarriage) in pregnant women meant the platform was banned but clever shoemakers cored out the section of the platform corresponding to the ball of the foot. Ironically by stabilising the foot they created the first orthopaedic footwear or high-heeled shoe. Despite this the heeled shoe we know today could not have been made in the past, prior to developed lasting techniques used for mass production at the turn of the 19th century. Once heeled shoes became passe for fashionable women the style was still enjoyed by female sex workers, even after the Revolution. So popular was the style for heels among sex workers the French girls that emigrated to the US continued to wear them much to the delight of full blooded all American Males. Soon after the first US heel factory was opened. With the introduction of Hollywood came the need to depict visually heroes and villains, clothing took on a special meaning especially with improved cinema photography and the full body shot. Clothing stereo types included shoes where the heeled sandal represents the modern-day, Jezebel. This image was forever frozen with the introduction of the stiletto in the early fifties, which happened to correspond for many with the beginnings of a post war permissive age. High heels are seen as a rite of passage from girl to women. Blisters and sprains worn with pride in a similar manner to nickel allergies.

Part 3

About Sandal

Feature of the sandal

1. Certainly one of the oldest and simplest forms of foot covering which date back many thousands of years.
2. A popular unisex footwear which is very comfortable.
3. The foot is free at the Toe and Heel.
4. The sandal serves according to the specific needs as the length can be adjusted with the help of buckles.

History of ladies sandal

The word for sandal is not Grecian but does relate to pre-Hellenic times. Scientists estimate people first wore animal skins during the Ice Age (5000,000 years ago). Rough shoes protected the feet of Stone Age people from rock and thorns. The first suggestion of foot coverings appeared in rock paintings from the late Paleolithic period (15,000 years ago). Spanish cave paintings show humans with animal skins around their feet. A major disadvantage was animal skins decayed and rotted away in a very short time. Sandals were believed to be the first crafted foot coverings and successors to primitive wrappings. The designs were both simple and practical. Straps or thongs attached the stiff sole to the foot for protection. Two basic prevailed one involved thongs fitted between the toes and the other more sophisticated had loops and holes along the edge of the soles for attaching thongs to the foot (Broby-Johansen, 1968). Soles were made from almost anything that was available including leaves and wood. In Ancient Egypt sandals were made from papyrus and palm leaves; rawhide was used by the Masai in Africa. Wooden sandals were made in India and rice straw was used in China and Japan. The leaves of the sisal plant provided twine for sandals in South America whereas the indigenous populations of Mexico used the yucca plant. The oldest surviving examples of papyrus sandals are exhibited in the British Museum and dated at 1,500 BC. The thong or toe strap became distinctive in sandal design. Subsequent civilizations preferred different toes, the Greeks for example made use of the great toe; the Romans, the second digit; and the Mesopotamians, the third toe. These distinctive, physical entities were also recognised and captured in Egyptian statues, and this was thought to represent celebration of other cultures. Sandals remain popular today yet their design has changed little from antiquity.

A brief history of sandals throughout the ages

Early Civilisation

The Sumerian civilisation were a notable non-Semitic culture which appeared in South Mesopotamia (Sumer) about the 5th millennium BC. From very early times their workmanship was of the highest order and as a people they were clad in skins and hides. Although Sumerians went barefoot excavations have unearthed a shoe with a turned up toe. The artefact was dated approximately to the "Ur Period" about 3000 BC and was thought to be the property of a king. Shoes were later worn at formal ceremonies by high dignitaries. The style of shoe become widespread throughout Syria and Phoenicia before passing to Etruria. Originally thought to have come from the mountain people. The up turned shoes were made from dyed leather and had a heel or elevated soles. The style eventually became associated with Cypriot fashion and is still worn today in Antolia and Syria. In the time of the Babylonians/ Assyrians (circa 2000 BC) the king wore slippers made from fine leather with bands of white and gold, and red. Women's slippers were made in white leather and fastened with jewels. Servants went barefoot. Babylonian men & women wore leather sandals. The Assyrians wore shoes made from fabric or soft leather. The Assyrian kings wore leather sandals with an ornamented heel piece sloping towards the arch of the foot to the back of the ankle. There were thongs round the big toe and two on either side finishing over the instep. Alternatively the regent wore sandals with an extra thong round the big toe. The sandals had thick leather soles and narrow leather thongs. Two came from between the two first toes and two crossing the instep and joined a fifth which was part of the sole and formed a heel band. Women wore flat leather slippers. Assyrian bowmen had leather boots with tonues protecting the. top and came to the lower part of the calf. These were fastened with thongs in front. Persians shoes (540-330 BC) were tied below the malleoli or had three button like fastenings over the insteps. Shoes of white leather worn to below the malleoli and tied in front with matching thong leather. The Persians fastened their low, open-toed shoes with triple Laces.

Aboriginals and Torres Strait Islanders

In antiquity Aboriginal people seldom wore sandals to protect their feet. Most tribes went unshod but some from the Northern Territory of Australia and adjoining desert country wore a primitive sandal to protect their feet from the scorching ground temperatures in summer (Reed, 1969). These were made from tree bark had no uppers and were retained by thongs to the first and fifth toes. Not particularly robust, the

crude sandals required to be replaced several times during the hot season.

Assyrians

The first pointed shoes were worn by the Assyrians (2134-1250 BC) although sandals with upturned toes did not come into general use until about 1370BC . Earliest Assyrian sculptures show foot soldiers wearing simple flat sandals with protection for the heel. The sandals had a pointed cross-lacing of thongs around the big toe with others over the instep. Sandals were made either as a thin sole with heelcap made from red or different coloured leather strips sewn together. A second sandal had a thickened heel area tapering towards the toes. The sole was attached covering to the heel and sides of the foot, leaving the toes and instep exposed. Later Assyrian soldiers, especially the cavalry of the 8th & 7th centuries BC, wore laced boots or greaves that reached almost to the knees. Assyrian bowmen had leather boots with tongues protecting the top and came to the lower part of the calf, and were fastened with thongs in front. The king wore slippers in fine leather in bands of white and gold and red. Subsequent regents of Assyria wore foot coverings rounded at the toe and decorated with crescents, rosettes, and other designs. Their leather sandals were ornamented with a heel piece sloping towards the arch of the foot to the back of the ankle. There were thongs round the big toe and two on either side tying over, the instep. Alternatively kings wore sandals with an extra thong round the big toe. The sandals had thick leather soles and narrow leather thongs. Two came from between the two first toes and two crossing the instep and joined a fifth which was part of the sole and formed a heel band. Their queens wore embroidered slippers similar to 19th century pantoffles. Gentlewomen's slippers were made in white leather and fastened with jewels. Servants went barefooted. Huntsmen wore knee high boots. In about 2000 BC the Assyrians started to wear boots and leggings prior to which the rank and file had fought barefooted. The Assyrian boot was broad and rounded, the front was cut away with a loose leather flap covering the instep and leg. The lacing was loose so the foot was not constricted. Pointed boots were not introduced until the time of the Hittites (2000-1200 BC) and the Persians when they were found to be useful in close fighting. The Phoenicians in Syria (2300 BC) were the first people to dye leather and their distinctive red dyes were made from crushed beetles. Later the Babylonians allocated colours to rank with gold and bejewelled sandals the exclusive reserve of the king and his court, pastel colours were for dignitaries and the middle class wore red or yellow only. The

Babylonian men & women wore flat leather sandals whilst the Assyrians wore shoes made from fabric or soft leather. Persians shoes were tied below the malleoli or had three button like fastenings over the insteps. Shoes of white leather worn to below the malleoli and tied in front with matching thong leather.

Egyptians

According to Ledger (1985) exhibits in the British Museum, the Victoria and Albert Museum and the Egyptian Museum in Cairo indicate shoes were worn as far back as 4000BC by Egyptian nobles. Their shoes were finely made from leather and elegantly matched their robes. Tomb and temple wall paintings also depict this. Heeled shoes started to be discovered when ancient Egyptian cities were uncovered. In the tablets relating to Pharaoh Narmer (3000 BC) these depicted the Pharaoh followed by a slave bearing his sandals which would infer sandals were worn only by royalty. Sandals dating back to 2000BC were discovered in the Fayum district of Cairo. These were held next to the foot by plaited or woven thongs between the great and second toes, then wrapped around the ankles. Queen Hat-Shep-Sut (about 1552 BC) is said to have worn jewelled sandals and enjoyed bathing her feet in scented oil. A popular Queen, she was thought to have made wearing sandals trendy and fostered the sandal trade of the time. A wall painting in her city of Thebes shows craftsmen fashioning sandals during the time of Thutmose III (1436 BC). Thutmose was thought to be the Pharaoh of the Exodus of the Israelites. By contrast Jewish footwear were made from rush, linen, leather, or wood and were tied to the feet with thongs. During Biblical times men wore brown or natural leather sandals. To the ancient Egyptians, footwear was a trapping of power and rank. According to Milne (1932) sandals may have had a protective function and saved the royal foot from the burning heat and sand flies, but it was not something those of low rank were allowed to do. Slaves and the poor went barefoot which would indicate, shoes were a luxury item. Pharaoh's sandal had peaked toes which historians believe was the influence of the Hittite (1280 BC). The first item recovered from the tomb of King Tut-Ankh-amen (1350 BC) was a magnificent box containing sandals and slippers. On the north wall of the outer chamber are two statues of the king and he is wearing shoes with a golden ring. In the tomb of Tut-Ankh-amen was also a shield decorated with figures wearing Assyrian Sandals. The Egyptian mummies were sometimes laid to rest wearing burial sandals made from linen and decorated with jewellery (Putnam, 1996). The Mummy of King Tut-

Ankh-amen had pointed sandals of embossed gold with the toes curled gently upwards. It was believed the sandals provided comfort in after death journeys. Golden duplicates of single thong sandals were used as funeral sandals for mummies in Egypt (Bigelow, 1970 p32). In a box of personal possessions were sandals made gold with beautiful coloured glass marquetry. One with a papyrus sole, had a leather anklestrap edged with gold ribbon motif on wide straps, the motif represented the Nile scene of lotus flowers and ducks in delicate circles of gold, the soles composed of plaques topped with enamelled gold lotus blossoms. The leather sole was about 1/4" thick. Painted on the back of the king's sandals were the representation of himself and his queen. Ankhesenamun was wearing simple sandals which followed her foot outline and attached to the foot with a single thong, actual sandals are an exhibit in the British Museum. A pair of bark sandals was found in the tomb with the representation of the King's enemies etched on the leather of the sole. Many shoe designers during the reported finds were inspired and contemporary fashion shoes in the 1920s had a distinct Egyptian look. Sandals found in the mummy case of Harsiotef, thought to be king of Ethiopia at the end of the sixth century BC were lined with cloth upon which was painted a figure. Inscribed in hieroglyphics is "Ye have trodden the impure peoples under your powerful foot." This is now housed in the British Museum. Enemies were depicted differently, Libyans appeared with beards and long hair. Libyans were black figures and Syrians white cloaks, (reported in *The Chiropodist*, 1927 *The Leeds Convention*, 1926). Originally sandals were made from a footprint in wet sand. Braided papyrus was moulded into soles and the sandals were attached by palm fibre thongs to keep them on the foot. The Egyptian sandal was held next to the foot by three ties or thongs. The main thong passed between the big and second toe and joined the other straps on the instep to form a stirrup and tied behind the heel. Alternatively, a thong between toe two and three with the others on the medial and lateral aspect of the midfoot was used. Once the Egyptians learned to tan hide, sandals were made with a leather sole (Girotti, 1986). Ironically Egyptian sandals were often carried to the point of destination, then worn for the occasion. Once leather footwear was available only Pharaohs and their immediate families were allowed to wear them. Allowances were made for high dignitaries and priests with the latter designated to wear sandals made from papyrus. Footwear did not differ according to sex. Soles were dyed and the sandals were made to accommodate right and left fittings. High born Egyptian women often adorned their sandals with jewels and precious metal. Later sandals were also made from gazelle skin and became associated with active pursuits

such as hunting. These may be the first examples of sports and leisure activity footwear. The introduction of uppers seem to have had a protective function. According to archaeologists it was customary to increase the length of a boy's sandal as he grew older until the point reached a good few inches beyond the end of the toes. It is not clear however whether this was for fit or fashion. The scourge of tight footwear seems to have been present then and books dating between 200BC and 200AD depicted corn cutters operating on feet incapacitated by tight uppers. During the New Kingdom, Egyptian soldiers wore rather sandals with bands around the ankles and under the arch of the foot. There was a thong from between the big and second toes which in the front of the instep, sandals woven of fine basket work began to appear. Women would also wear uppers. Later when sandals became more commonplace they were adapted to work situations. Butchers would have their work sandals made with a slice of cork sandwiched between two layers of leather on the sole to give them height to stand over the carnage of bones and flesh. The three pieces of the sole were held together by small wooden pegs. The butchers platforms added 12" from the floor which helped them cope whilst slaughtering the animals. It was also reported sandals from Lower Egypt were discovered with a 'follow me' message on the sole in nail. Some authorities think these belonged to contemporary sex workers. Girls of sport wore study sandals made from gazelle hide. Priests worshipped foot but wore palm leaf sandals which were made so that they could be slipped on from the front or rear. Egyptian priests would remove their shoes out of respect for their gods. A common cure for headaches in ancient Egypt was to inhale the smoke from burning sandals.

Biblical Times

In Biblical times animal skins were used for clothing. "...Unto Adam and also unto his wife did the Lord God make clothes of skin and clothe them..." Genesis III verse 21. Elevated sandals were worn by girls much to the consternation of their elders. "Haughty daughters of Zion walking and mincing as they go and making a tinkling with their feet. The lord will take away the bravery of their tinkling ornaments about their feet," Isaiah III verses 16-18. Going barefoot on religious ground was certainly mentioned in the Old Testament. Moses hearing the voice of the Lord when approaching the burning bush, at Mt Horeb was told .."Put off thy shoes off thy feet for the place whereon thou standest is holy ground." Following a bereavement, mourners went without shoes or with one shoe only, until Ezekiel was commanded by God to be shod. Shoes and sandals were used to seal bargains," ...Now this was a manner in former

times in Israel concerning the redeeming and concerning changes for to confirm all things: a man plucked off his shoe and gave it to his neighbour and this was a testimony in Israel." Ruth IV verses 7-8. It was also customary when the husband died, for the wife to marry the surviving brother. "... Then his brother's wife came unto him in the presence of the leaders and loosed his shoes from off his feet and spit in his face. ... and his name shall be called in Israel 'the house of him that hath his shoe loosed'...." Deuteronomy 25 verse 9-10.

Cretans

Going barefoot indoors and in sanctuaries was common practice among all Mediterranean Civilisations and sandals were only worn when walking outside, Homer described his heroes putting on their shoes to travel or fight and in the temple of Nike Apteros, Athens there is a carving of Victory untying her sandals when withdrawing from action. Great court personages were seldom seen outside their regal mansions without footwear which would add weight to the argument only affluent men wore sandals and the poor went barefoot. Sandals worn during the re-Hellenic Period were finely worked and attached above the ankle with thick laces. Sometimes these were decorated with beads which were very fashionable, men's boots reached to the calf and had thongs that bound them to the leg. These were made from brightly coloured skins and had small heels on the sole. Hilly terrain thought to be the reason why heeled footwear was worn as it provided greater control on sloping surfaces. Frescos from this period showed men wearing footwear whilst competing in games or attending ceremonies at the royal court. Although the still to do women of Crete had sandals, slippers and high boots with heels, they chose to wear these, infrequently. Trade between the Mediterranean civilisations is likely to account for the appearance of familiar footwear styles in areas where there could be no practical or logical reason for their existence. Historians believe heeled shoes for example may have appeared attractive to flat land dwellers who saw the opportunity to use them for reasons of stature.

African Sandals

Until comparatively recently sandals were the most widely used footwear in Africa. The Hausa culture from southern Sahara wore turned up sandals. Historians are unsure whether this was to protect their toe nails or as a symbol of status. Both men and women of the Hausa people painted their toe nails. The sole of sandals in Somalia were made several centimetres wider than the foot which kept the

wearer from sinking into sand and protected them from the scorching imperatives of the ground. The layered leather soles protected the set from the heat, while the upturned fronts enable the wearer to walk more easily, with the rolling gait, on sand. Sandals were worn for status in the court of Ashanti, in West Africa. Sometimes leather soles were cut in the shape of human figures and were decorated with wooden figures covered in gold. Dyed leather from North Africa

was renowned and soon the ancient Egyptian incorporated the famous red into their footwear. Wooden sandals with toe and heel stilts have been widely worn throughout Africa and Asia. Maisi sandals from East Africa were typically made from rawhide. The three cornered style had a squared off toe section with heel and thong. Sandals worn by the Acholi people, Uganda were also made from rawhide but had a concave sole with a big toe loop and tarsal band. The sandals had an extra wide sole to protect the wearer's foot from hot and stony surfaces. The leather was decoratively scored and inlaid with natural pigments. Hides were traditionally softened with cow dung and cured between layers of mangrove bark. Some Africans sewed slip on styles in colourfully pigmented leathers.

Asian Sandals

Hindus, like the Egyptians, made more ornamental use for footwear with the vast majority of the populous going bare foot (Franzine, 1993). Until relatively recently the Indian Army wore sandals as regular issue footwear. This style was copied and proved extremely fashionable in the West.

Greeks

Greek Gods and heroes were often depicted barefoot with at least one notable exception i.e. Aphrodite. Greek warriors or hoplite wore body armour with heavy leg greaves but no shoes. If art is to be believed the Trojan war was fought bare foot and Alexander the Great set off to conquer half the world with barefoot armies. The Greeks did wear sandals however and these became quite sophisticated. The earliest shoes worn by the Greeks were made from leather or wooden soles attached to the feet by leather thongs. At first the shoe served only as protection from the elements but later in Roman times footwear was developed for colder climates. Slaves went bare foot and the inclusion of carved tongue or lingula into the sandals became the mark of a free citizen. In time Sicyonia became the main city for shoe making in Greece. By all accounts the Greeks took good care of their feet and

adapted footwear for every type of activity. The arrangement of the sandal straps, worn in Ancient Greece, varied but usually consisted of a broad band across the front of the foot, and a thong between the toes. The thong was sown to the sole about one to two inches from the end. This was pulled through between the first and second toes and sometimes between the second and third toes to meet with four other laces anchored to the sole. The complete intertwined system finished above the ankle. Sandals were worn by both sexes and fastened in varied ways as can be seen from the marble models that served to advertise ancient shoemakers. Straps were very light and elegant, leaving the foot almost bare. Some were purple with piped edges attached to clasps elongated by short cords of plaited leather. Others were simpler, with a fan like spread of straps passing through the toes. The Greeks rarely wore upturned toes but did have the soles of their sandals studded with nails. The colour of sandals varied and were either worn in the natural colour of leather or dyed red, white or black. Some more affluent individuals had their sandals gilded. Alcibiades (450-404 B.C.) wore a shoe with a gently peaked toe made from pliable yellow leather or fabric which fitted snugly and had coloured lacing, intricately laced around the whole foot. By 400 BC shoe and sandal making had attained a high degree of sophistication. There were many types of sandal each designed or designated for different functions. In the time of Homer (8th Century BC), soldiers wore the Krepis. These were

made from heavy leather with an ankle strapping. There was also a lady's Krepis which was a brightly coloured version of the anklet sandal. The common wooden sandal was worn by ordinary people whereas the nymphidiai were wedding shoes. Priests wore phaikas and the kothornos and embates were specifically for tragic and comic actors in honour of Dionysus, the Greek God of wine and fertility. Kothornos also known as cothurnus or buskin had raised heels which resembled a clog. This would raise the actor above the crowd and thespians could play different roles using kothornoi of different heights. The swaggering gait of the Greek actors was understood to be erotic, sending many females into ecstasy. The very thick sole of the kothornos appealed to the Romans and they thought it fitting these should be worn by tragic actors. The name cothurna, became the name of the tragic genre, itself. The shoe had a thick cork sole designed to increase the actor's height (bushkin) It was ungraceful and always hidden by long robes. This style was later the inspiration for the classic revival in 19th century fashion, giving its name to a light sandal like shoe, tied with laces criss crossed

up the leg. The crepida was similar to the Roman carbatina (or karbatine) and was formed by a thick sole with a narrow piece of cowhide leather covering the side of the boot, pierced along the top with several holes through which a thong passed attaching it to the instep. Sometimes the edges had leather buckles through which strips passed. Similar types of shoes were worn by the Teutons. Up to the 16th century German peasants were wearing karabtines and this type of simple footwear can be seen today in the traditional footwear of Romanian and Slavak countries. Whilst sandals were worn outdoors it was the normal custom to go barefoot at home. At first women did not wear sandals but as both style and quality of sandals flourished they became more popular. As shown by the Tangagra statuettes, dating from the 4th century BC, more elegant shoes were worn by women, e.g. red ones with yellow edged soles. Shoes were used to identify station **A** the **heiahtoTihe^ole ajid^e^olojrr^riejita^njndj**cating the social class of the wearer. Courtesans wore footwear made from soft leather dyed white, green, lemon or yellow. Betrothed girls and young brides wore sandals made from leather dyed white. Women of ill repute (or salmakides) used to wear the krepis and were said to attract men's attention because of the way they walked. By wiggling they created an audible "clack" when their shoes hit against the ground thereby deliberately flaunting their sexual charms. Spartan, Lycurgus in the 7th Century BC ordered the populace to go barefoot in an attempt to curb extravagant footwear but the edict failed principally because what differentiated slaves from free men was what they had on their feet. Young women wore white leather sandals with a band across the foot at the base of the toes. Ankle and heel straps joined a narrow thong attachment to the sole at the arch of the foot Ornamental heart shaped pieces of leather cover the insteps. The Greeks emphasised design and beauty with elegance, refinement, extravagance and rich ornamentation, especially for women. There are many references to these features within the poetry of Sappho (6th Century BC) and Homer (8th Century BC). An old Greek legend tells of an old man's advice to husbands to keep their women at home by giving their wives heavy shoes to wear. The clever women foiled their husbands by putting pieces of tree bark under the soles. The importance of the sandal in mythology is seen in the story of Persephone the daughter of Zeus and Demeter. Referred to as "she of the beautiful ankles" she was abducted to the underworld by Pluto and required to remain there for the duration of the winter months before reemerging in the Spring. Symbolically this represented the start of vegetative growth. Moments

before her abduction Persephone walked through the quiet meadow wearing sandals. The sandal came to represent to the Greeks and Romans the boundary between death and rebirth, light and darkness, heaven and hell. It was commonly thought the body absorbed vital energies of the boundary where human and divine coexist through the sandal. Aphrodite, the Goddess of love, was often depicted naked except for a pair of sandals. Participation in sport was barefoot and when athletic sandals were introduced ordinary Greek citizens thought them decadent, anaesthetic and somehow a violation of the Olympic ideal (Franzine). The Greeks developed sandals, shoes and boots and these can be seen in the many monuments that remain (Guhl & Koner, 1994). Shoes were a logical extension of the sandal with side extensions attached to the sole and held next to the foot by laces at the ankle. The top of the foot and toes were left bare but in closed shoes footwear was attached with laces across the foot. Shoes incorporated a small heel. Although the shoe was originally worn by soldiers the more elaborate version was worn mainly by effeminate young men. Boots were made from leather or felt and were closely attached to the feet reaching up to the calf. The pedila was an open fronted boot which was together with laces. Boots were reserved for athletes, hunters and travellers. Hunters wore high boots (cothurnes), these covered the whole foot and leg up to the calf level. They laced at the front over a broad tongue, and were made with a flat sole of wood or leather. These boots fitted either foot. Young Spartans were reported to wear red boots to hide the flowing blood from wounds. There was even a low hunting boot which resembled the North American moccasin, although there was no connection between the two. Among the ancient Greeks, shoemakers began to acquire the reputation for character which they have held ever since. Apollo the God of the physicians, was also the God of shoemakers, and it was customary for every shoemaker to keep a tame crow outside their place of business. Shoemakers have held a distinctive place among craftsmen through the ages and were often actively involved in protests against oppression. Shoemakers became esteemed citizens in ancient Greece. Footwear became so well established that many shoe makers eventually specialised in various tasks and products. Some cut hides, others assembled the various parts and there were even men and women's shoemakers. Shoes were made from many unconventional materials and for specific requirements. Sandals, shoes and boots were made with the soles of leather, matting or felt, cut to the shape of the foot and varying in thickness; if the wearer wished to add to his height he wore a thicker

sole. Lovers would carve the name of their loved one on their soles and with every step left an imprint in the sand to witness his total devotion. Pythagoras (582-507 BC) believed in reincarnation as animals and so required his disciples to wear sandals made from the bark of the tree. Philetas the poet who died in 290 BC was so thin he needed especially heavy shoes made from lead to keep the wind from blowing him over and out to sea. The most bizarre footwear was a pair of musical sandals made at the bequest of a flute player. The craftsman made him thick soles concealing a metal device that emitted sounds under the pressure of his feet as he walked (Ledger, 1985). Despite the existence of shoes, the Greeks often walked barefoot in the streets and customarily would remove their footwear before entering their homes or the house of a stranger. The Greek historians, Herodotus and Strabo described the dress of the Medes, including a high shoe, or low boot, that opened in front and was fastened with buttons. The Median sovereign wore a high, long shoe which buttoned at the front and had a toe ring attachment. The colour was saffron or deep yellow. Greek historian Polybius records that soldiers had to be specially cautioned against devoting too much thought to their sandals at the expense of the rest of their equipment. Sicyonia was the main city for shoe making in Greece. Alcibiades (450-404 B.C) wore a shoe with a gently peaked toe made from pliable yellow leather or fabric which fitted snugly and had coloured lacing, intricately laced around the whole foot. Although the shoe was originally worn by soldiers the more elaborate version was worn mainly by effeminate young men.

Romans

Footwear played a major role in the development of the Roman Empire for not only did it provide protection for those who travelled by boat, like the Greeks, but also to soldiers who marched to the end of the Empire. Indeed as the empire increased in distance from Rome, supply lines to the outposts became impractical. Hence the Romans had to introduce the sandal and shoe making crafts to the conquered. This is thought by many historians to be the reason why the craft of shoe making spread. Whilst the Greeks were preoccupied with elegance and grace the Romans devised thongs suitable for their military activities. The Roman Empire stretched far beyond Greek boundaries and the terrain and weather conditions necessitated more sturdy footwear. The Romans adapted the Etruscan style of hobnailed footwear and the caligae provided a sturdy, hobnailed, thick-soled, heavy, leather, sandal with an upper that reached the instep. A lattice of soft, leather strips

tied around the shins or the sandals were held against the bridge of the foot by a tongue. The toes were left bare. During the Roman republic (509BC - 43AD) the stocky, strong and rigidly schooled people went barefoot later adopting ankle boots of rawhide or leather which laced completely up the front enveloping the foot. Towards the end of the republic, ladies of quality wore sandals with very thick soles to make them look taller. White was popular at was popular but later more exotic coloyurs were preferred. Pearls and other gems were added to decorate the footwear of the rich. The Ladies of Rome wore purple or green sandals whilst the women of Pompeii preferred white, red or guilded leather. Romans began to wear a variety of footwear between 300-27 BC. Caligae were worn by soldiers up to the rank of centurion, and came in several types i.e. speculatoria for scouts; equestris for horsemen; and clavata with iron nails protruding underneath for fighting on rugged ground. When Roman soldiers returned victorious to Rome they frequently celebrated by substituting the bronze nails which held the caligae together with gold and silver tacks. Caius Caesar Germanicus (AD 12-41) was a Roman emperor (AD 37 - 41), better known as Caligula (or small shoe). When he was a boy he lived with his father in a fortified garrison and popular with his father's soldiers they nicknamed him Caligula because he wore children sized caligae. The campagus was worn by officers of high rank, the higher the shoe top indicated the higher his rank. The Romans adapted their boots from the Gauls and only wore them in bad weather. Gaulish boots became known as galoshes (Sunshine & Tiegreen, 1995). A non-military caligae or senatorum was the favourite choice of senators. Probably the earliest sandals were the cabatina. Primitive they were made from one piece of ox hide wrapped around the foot and laced over the instep. These were cut two inches longer than the foot size and drawn up over the foot with a thong. The thong was then laced over the instep. The street shoe or calcei also covered the foot and had a separate sole and top, instep lacing, which tied about the ankle with the knot in the back. Patricians wore these made of elegant leather and gold or silver ornaments. The soccus was a shoe worn by comic actors, women and effeminate men (leather Buskins or half boots were introduced in Roman Times and were worn by the tragic actors). Gradually this style of shoe became considered as "unnatural". Julius Caesar (101-44 BC) was reported to have offended the senate by wearing high, gold trimmed, red boots with high heels. Red was a colour worn by the young and considered incongruous for a man of his advancing years. He claimed to wear them in the fashion of the ancient kings of Alba from whom pretended to

decend from. Suetonius assures us in his writing, Julius Caesar just wanted to look taller. Claudius I (10 BC- AD 54) Tiberius Claudius Drusus Nero Germanicus), was Roman emperor (AD 41-54), When Caligula was murdered (AD 41), Claudius was proclaimed emperor by the Praetorians. Despite suffering from a type of paralysis, he consolidated and renewed the empire. Claudius caused Messalina, his third wife, to be executed. He was in turn supposedly poisoned by her successor, Agrippina II, after she had persuaded him to pass over his son Britannicus as heir in favor of Nero, her son by a former husband. Claudius was much reviled by his enemies; however, he seems to have had considerable administrative ability. During his reign marines were ordered to go barefoot because once some marines from Ostia demanded compensation for the emperor for the marching shoes they wore out. His answer was to forbade the entire fleet from wearing shoes. Claudius Caesar Drusus Germanicus (AD 37-68) Claudius II was better known as Nero and wore silver soled shoes, his wife Poppaea had golden ones. The soles were made from poured gold and straps sparkled with encrustation of rare stones. The effect was dazzling and undeniably sexy. Their horses were shod with golden horseshoes. Nero was reported to wear special gold sandals the day he killed his wife by kicking her to death. During the reign of Nero, shoemakers shut up shop and those people : wanting shoes had to beg favour from the tradesmen. Real money was required to buy shoes and often these were supplied under the counter. Shoemakers would personally deliver the goods and did so by night. This may well be why shoemakers have gained a reputation as untrustworthy. The real reason they did it was Nero I was systemeatically forging coinage from base metals and demanded the old gold and silver coinage was returned to his treasury. People began to hoard their coinage and austentatious footwear was sold illegally. During nero's reign, senetors suspected of or confessing to being Christian were stripped of their purple togas, : their red laced boots removed, and their ivory stools smashed to bits. Emporer I Lucius Domitius Aurelianus (AD 212-275) ruled for five years between AD 270 - 275) tried to limit excesses of fashion by forbidding men from wearing coloured (red, yellow and green) shoes and allowing only women to choose materials and colours freely. He reserved the right to wear red or purple for himself and his sons. He succeeded Claudius II and defended the empire against the barbarians and ambitious rulers (e.g., Zenobia of Palmyra). One of Rome's greatest emperors, he regained Britain, Gaul, Spain, Egypt, Syria, and Mesopotamia and revived the glory of Rome. He was murdered, and Marcus Claudius Tacitus succeeded him.

Despite the efforts of Emperor Heliogabalus (AD 218-222) to ban women from ornamenting their shoes with gold and jewels, in the more luxurious days of the Roman Empire, thongs were decorated with gold and precious stones. Heliogabalus had his shoes decorated with diamonds and other precious stones and engraved by the finest artists. He never wore the same boots twice. Although sumptuary laws and price controls were later imposed by Gaius Valerius Diocletianus (AD 245-313), in AD 301 footwear came in many styles and colours each reflecting class distinctions. Only male citizens entitled to wear toga could sport the calceus which was a shoe or short boot. The colour of the calceus indicated social standing. Red was at first the colour for high magistrates but later became the Emperor's prerogative. Only those in the service of Edile were allowed to wear red. During the reign of Caesar Nero I (senators suspected of being Christians) were stripped of their red boots. Black or white became the preferred colours for senators and women's calceus were ornamented with pearls and embroidery and included subtle or brighter colours. Pale coloured sandals became the mark of wealth and privilege, this was because the lightening process was lengthy and expensive. Between AD 27-300 Roman footwear was a distinct badge of social position. According to Gaius Plinius Secundus (62-144 [AD) ladies had their indoor slippers lavishly ornamented with gold leaf and jewels. Generals during their triumphant marches wore red Calcei until eventually common people were allowed to wear them. The calceus was a soft shoe which had side slits and straps lacing at the front. Often made from coloured leather red was preferred by the nobility (black by politicians). The calceus came as a shoe or half boot covering the foot sometimes up as high as the calf. Often the low shoes strapped high on leg, and these were reserved for Roman senators wear (calceus particus). The calceus was probably the most common outdoor shoe and would be worn by men and women. It was characteristic of the Roman citizen and slaves were not allowed to wear them. In Rome the calceus senatorum was probably black at first, before becoming white under the late Empire. The leg was quite high, with a slit on the inside fitted with a tongue. Its fastening was complicated, with criss cross thongs and dangling tabs. The mules with their red leather thongs were reserved for the Emperor. A variation of the calceus had pointed toes which bent upwards. These were widespread in the Mediterranean countries, particularly Etruria, from where it passed to Rome. It was worn in the East during the greater part of the Middle Ages. The Calceoulus was a lighter, more elegant calceus worn by women. The sole of the calceus followed the shape of

the foot and the upper fitted neatly over the instep and was bound into place with thongs fastened to the back and tied round the ankle; a second pair of straps was attached at each side of the sole and tied to the instep. Officials wore high boots of red leather, and ladies often wore white boots tied with coloured silk straps. Half shoes or *crepida* laced across the instep were also worn. The *gallicae* was originally from Gaul and appear in Rome in the last century of the Republic. The *gallicae* was an entirely closed boot, and some authors place them midway between the sandal and the shoe. The *pero* was a light boot reaching the calf and laced all its length. It was worn in the country and made of raw, natural hide. The *campagus* was derived from this, and was made low, leaving a large part of the top of the foot bare. Gallienus launched the *campagus* and the *zancha*, the latter being a high leather boot fitting closely to the leg; it was supposed to have originated in Armenia or the Crimea, and indeed it may have been a style disseminated by the Scythians. The *muleas* was a red or violet coloured boot worn by Roman patricians who had served as magistrates. Some authors believe the *muleas* was confused with the *calceus patricius* of Roman senators. The Romans, like the Greeks never entered a house without removing their shoes. In the Republic however it was considered bad manners to go barefooted in the house. They would exchange their outdoor footwear for banqueting slippers called *soleae*, which were carried by a servant, under their arm. *Soleae* were slippers made from felt and had cords from the sole which fastened over the instep. Alternately *crepida*, which were leather *espadrilles* were worn. These were held on by a strap passing through the eyelets, with a wide range of fastenings. Historians are not in total accord and many believe Greek sandals were not generally worn because they were regarded as non patriotic. However others believe this was not the case. Women wore *soccus* indoors, a type of decorated, slipper, or *calceoli*. The *soccus* was an elegant and decorative slipper that appeared during the last years of the civilisation when trade with the Orient had introduced fabric made of silk fibre. The colourful shoe in reds, green, yellows or white was a delicate shell shape. (Bigelow, 1970 p56). All these type of shoes reached the ankle and had flat cords, these passed through slits made on the instep. The upper of woman's footwear was not divided into two pieces, like men's. Ladies shoes were made in red, green or yellow as well as white. The *campagus* was slipper men wore around the house. The *pero* had many variations; the senatorial style was made of black leather with silver C for Consul placed behind the ankle on the heel. Women wore a white boot laced with coloured silk

straps. This was called the phaecassium. Emperors wore shoes in the current styles but made from richer materials. Women's feet were considered to represent a symbol of chastity and were worshipped by fetishists. Senator Lucius Vitellus kept a shoe of his mistress under his tunic and would kiss it frequently. This type of fetishism, according to Ovid in his *Ars Amandi*, led Roman women to confine their feet into tiny shoes. Prostitutes wore sandals and respectable women generally covered their feet more fully when walking out. Slaves were forbidden to wear shoes and the poorest citizens wore only sandals. Criminals were forced to wear heavy wooden shoes which made it difficult to escape from. Throughout development, comparatively little attention was paid to fitting qualities or comfort although some of the early sandals displayed definite pairs. Shoemaking (or *ars sutrina*) flourished and the guild of shoemakers was established in Roman Times. Shoemakers were divided into those who produced *caligarii* for soldiers and *sandalarii* for civilian footwear. After the great fire of Rome the government started to mint a debased coinage. During this time shoemakers closed their workshops and anyone wanting shoes had to pay grossly inflated prices. All such trade took place at night. Foot gear changed little during the Imperial era of Roman history but during the early days of the Byzantine Empire the custom was adopted of cutting the upper of the *calceus* into intricate open-work patterns so that it became an open work sandal. There was evidence of right and left sandals. As an example of just how serious footwear was taken, Emperor Vaspasian (69-79AD), himself the son of a shoemaker, refused to give professional couriers a footwear allowance because he thought they could run faster barefoot. Probably the most famous Roman thongs ever worn belonged to Mercury, fabled messenger of the gods. His winged thongs were called *Talaria Crepida*. Like the Greeks before them the Romans thought shoes carried many meanings and were not just symbols of social position they were also considered good luck charms. Appropriate footwear could invoke the favour of gods and avert evil. The patron saint of shoemakers is St Crispin and traditionally shoe shops close on St Crispins Day (October 25th). He was born into a wealthy Roman family in the third century AD, but was converted early to Christianity. In these days it was not considered the done thing for a noble Romans to do and history indicates he was disinherited. Forced to make his own way in life he became a humble shoe maker. He became a lay preacher supporting himself by making and selling shoes. Eventually he was put to death for his beliefs in Soissons, France in 288AD. Shoes were worn outside has been

discerned from the wearing down of steps leading to a building. Compared to the indoor surfaces the | erosion is related to footwear. Slaves were not permitted to wear sandals they were called 'cretin' because it was customary to mark their feet with chalk when they were put up for sale. Those with dusty feet who's come on a long trudge to the market place were called 'typsati' because of the dust. For a time high priests wore highly ornated sandals decorated in gold and precious stones. Shoes in Rome became a prized possession. They were a mark of status more than than a necessity to walk the streets. Due to the popular fashion of highly decorated footwear threatened to usurp the shoemaker. Lovers would often preserve the shoes of their loved ones because of their intrinsic value. It also became a custom for a mistress to present her lover with the token of her sandal.

Clerical Sandals

Although priests occupied an important position in ancient societies, they almost invariably performed their offices, barefoot. This was thought to have been an outward and visible sign of their inward, humility and purity. Clerical sandals were simple and devoid of any fashion and symbolised the cleric's separation from worldly vanities. With the fall of the Western Roman Empire and the barbarian invasions, craftsmanship declined in Europe. Common people went barefoot or wore rough shoes. During the Dark Ages shoes were crude protection with little emphasis given to fashion. "Sovereign's law" promulgated by Charlemagne (742-814 AD) required clerics to wear sandals when celebrating mass. Many medieval priests and Franciscan monks wore wooden sandals as a sign of disregard for material luxury. During the pilgrimages many went barefoot out of choice, or to do penance for their sins, whilst others wore sandals as a token gesture. In the High Middle Ages, when fashion revived, shoes took on a bizarre turn, incorporating many indecent overtones. Footwear was very expensive and it was common to bequeath footwear to others. Shoes were thought to take on the essence of the wearer and were often placed in roofs and fireplaces during building work, to fend off evil spirits. During the Middle Ages, the leather craftsmen of England organised themselves into guilds, or trade associations. The Worshipful Company of Leathersellers, founded in 1492, still plays an active role in the UK, leather industry, in the field of technological education

Japanese Sandals

Ancient Japanese wore sandals appropriate to their position in the social strata. From the Imperial House, merchants and professionals, to actors, all had specific footwear. The braided sandals were called zoris. In the 19th century sandals were made from iron with hemp rope laces threaded through a series of iron loops on the perimeter. At the coronation of Emperor Hirohito he wore platform geta.

India, Pakistan & Persia

Hindu religion held the cow as sacred therefore leather was not used in sandal manufacture. Instead, wood, ivory or metal was preferred. The toe knob grip was a distinctive feature and sandals were carved from wood. Sometimes shoes were sheathed with intricate worked silver. Sometimes the sole section of toe and heel were on stilts and may have inspired the chopine.

The Renaissance (14-16 Centuries)

In Europe, the Renaissance was a time of turbulent change and discovery. Shoe fashions reflected these changes. Men's sandals became less thong like and more of a modern sandal design. Known as "tagliate a pezzi" or "cut to bits", the Renaissance sandal had open slits cut into the upper. Pragmatically this allowed the skin to breathe but was also used to display the wearer's brightly coloured hose. Women rejected sandals at this time preferring wooden or cork clogs called pantoffles.

Seventeenth to Nineteenth Century

Early in the seventeenth century came the introduction of heels. In the era of the French King, Louis XV (1715-1774) a pair of shoes could cost as much as a peasant needed to live for an entire year. In times passed often shoes were bequeathed to members of the family and it is thought "following in your fathers footsteps" may have derived from this practice. Sandals were not popular during this time, first shoes then boots were the preferred styles of footwear.

The Twentieth Century - the fashion sandal

The emergence of Hollywood brought with it the ultimate celebration of the fashion shoe (Mazza, 1994). The sandal made a fashion comeback in the nineteen twenties as skirts became shorter shoes became more important. T strap sandals with high thick heels were introduced in the 20s. Wedge soled play shoes were also introduced for fun wear in the 30s. According to Bigelow, (1970) shoes in the forties were heavy and clumsy. Shortage of material due the war meant there were many

innovative designs for uppers and outsoles. Shoe designer Salvatore Ferragamo invented the wedge heel and also introduced a metal arch support which meant heeled shoes no longer required toe caps. The Peekaboo style or toe cleavage corresponded to the development of the plastics industry which resulted in a rediscovery of the fashion for nail painting. By the thirties the sandal became the ideal vehicle for showing off the entire foot (O'Keefe, 1996). The new pin up girls used this means to flaunt their charms and broadcast eagerly through the developing popular mass media industries. Whilst high fashion shoes were considered normal for the glamour set throughout the thirties and forties, daytime shoes which revealed the toes were considered immodest. The First World War brought a shortage of raw materials and consequent decline in the production of fashion shoes. Italy, in the thirties and forties was a time of national self sufficiency with shortage of hides and other raw materials. Shoe designers cleverly adopted other materials such as fabric, raffia and plastics and made shoe soles from cork. Even after the Second World War Europeans were still involved with rationing and sandals uppers were made from felt, hemp, straw and textiles. Salvatore Ferragamo pioneered making sandal straps from cellulose and paper braided with gold threads. He also used nylon thread to make a transparent vamp or invisible sandal. During the 60's, sandals became flat and sensible with the arrival of the exercise sandal. A decade later the heel was back and the sandals were made in exotic fun synthetics which was popular but left a slightly tarnished image. The introduction of seamless tights provided the opportunity to include back less sandals! which exposed more flesh and became very popular as a glamorous shoes.

Part 4

Project Overview

The title of my project is "Studies and manufacturing of fashionable ladies sandal by using materials in vogue." First of all it should finding the way or making a project plan:

- Finding the key words of the project subject. There are two significant words in my project. **Fashionable** and **materials in vogue**.
- Identifying the material in vogue.
- Collection building and making sample.
- Comparing the material in vogue with the common materials using in ladies sandal production.

Fashionable

The term fashionable is come from the term FASHION. "Fashions the representation of personality for a particular purpose to enhance or to maintain lifestyle".

In our daily life, we play various roles. In general, play those roles; knowingly or unknowingly, we represent our personality for each role or purpose in a distinguished way to express our life-style to other members of the society. We always try to enhance or at least maintain our lifestyle. Thus, given the nature of lifestyle, purpose varies. Accordingly, we change the way we represent our personality from purpose to purpose to enhance or maintain our lifestyle. Thus we change our personality depending on purpose, but we do not change our lifestyle or personality depending on purpose. We represent our same life style for all purposes during a given period of time, but not in an identical way.

In simple, layman language, fashion is a TRY to break the rigidity of folkways which does not result in any social sanction or mores. This does not mean that fashion is not folkway. In fact, fashion is a limited deviation from folkways and is accepted by majority of the members of the society. Nonetheless, fashion last for short period of time. While folkways do not change rapidly, fashion does not change through temporary conformity to the needs and desire for something new. Thus we now understand that fashion has a time dimension and a social acceptability dimension. If we consider these two aspects of fashion together, we can say that fashion is deviation from the folkways which last for short period of time and changes from time to time, and the deviation is limited to the extend which is acceptable to majority of the members of our broader society in which we live and interact.

Materials not in vogue

The term in vogue means not common. So the materials in vogue means the material which not in common. According to my project work the materials which are not common in sandal manufacture is treated as the materials in vogue. The following unit show the materials commonly used in sandal production and the materials which is not common termed as materials in vogue.

Materials used in footwear/sandal:

A.Upper:

Leather

Properties of Leather

- The structure of the natural leather is unique, particularly in the complex random weave of its fibers.
- Leather has particularly good tear strength.
- Leather has both elastic and plastic property.
- It is an identification of the resistance of leather to break. Leather has maximum of 210 kg/cm³ tensile strength.
- It determine to resistance of the tear of the leather due to stitches when it is in regular use. Tear strength is 30 Kg/cm³.
- It indicates the resistances of leather tear in lasting through perforations, sharp angles or along seams.
- A certain amount of elongation without break is necessary for pulling over on the last or other uses. For leather elongation at break is 45-75 p.c.
- Leather surface do not readily conduct heat, and they are interlaced with air spaces. Therefore, leather shoes are cooler in summer and warmer in winter than shoe made of other materials, making them more comfortable and versatile.
- Leather is hygienic for foot or their uses. Leather adapts to the slope of the foot during fitting. It has water permeability, water vapor resistance. Water resistance, perspiration resistance and thermal conductivity. All things give compact.

Categories of Leather by Quality

There are different grades of leather and the quality of footwear depends utmost on the quality of its leather:

TOP or FULL GRAIN refers to the top or hair side of the skin. It has a smooth grain, is soft, and easily absorbs dyes. Look for small pores.

CORRECTED Leather is top grain, but damaged and thus lower quality.

SPLIT Leather is the part under the top grain (everything but the top half of the leather). These are used for suede, embossed or coated footwear finishes to disguise the lack of grain.

BONDED Leather is the particleboard of leather. It is made from chopped leather bonded with glue.

The most common kinds of leather for shoes are:

The term hide is used to designate the skin of larger animals (e.g., cowhide or horsehide), whereas "skin" refers to that of smaller animals (e.g., calfskin or kidskin).

Buckskin - from deer or elk, often a suede finish.

Calfskin - a strong fine-grained leather from young cattle.

Cordovan - durable, non-porous hide made from the shell (circular piece of leather) of the top hindquarters of horses. Named for **Cordova, Spain**.

It's also the name for a reddish-black shoe **color** even when the leather isn't Cordovan.

The most common colors of real Cordovan shoes are, of course, burgundy and black. However, you can buy Cordovan shoes in dark brown, mahogany, or light tan.

Real Shell Cordovan leather is expensive since you can only get two 24 inch diameter pieces each of useable hide per horse. The tanning process is longer than for some other hides, which adds to the price.

The advantage is that it takes a deep shine and is very durable since it's less porous. The disadvantage is it's less porous and thus breathes less than other leather shoes. The creases in cordovan leather are usually lighter not darker in color.

Cowhide — The hide from cows is the most common material for shoe making. The strongest and most massive part of the hide is located on either side of the spinal column and called side leather. The neck section is used for the insole and middie sole, the belly for the welt, heel cup and vamp.

Exotics - leather from alligator, crocodile, lizard, snake, ostrich, boar, shark, pin (Caution - Cow leather can be embossed to resemble exotic skins such as alligator).

Kidskin - leather from a young goat, very pliable and soft.

Napa - sheep or lambskin.

Nubuck - exterior side leather which has been brushed for a nap similar to suede (which uses reverse, or flesh side of leather).

Patent - leather processed on the grain side to form a bright hard brittle surface. Used for formal footwear. See "history" for why this is called Patent.

Sheepskin can be used in linings and slippers.

Suede - (also called Reverse Calf) split leather, usually of lambskin, doeskin or cowhide that has been buffed on the flesh side to raise a slight nap. The word comes from part of the French phrase, "gants de Suede", meaning "gloves of Sweden".

Usually a fall season material, suede was once considered only for country shoes. The Duke of Windsor made them popular for more sophisticated city wear when he wore brown suede shoes with his flannel suit to the Long Island Meadowbrook Country Club in 1924. By the 1930's suede was popular with everyone.

TEXTILE

This term describes any woven or knotted material. Yarns used for weaving and knitting are of natural origin, such as cotton, wool or linen, or a host of synthetic yarns, such as viscose, nylon, orlon and Dacron. Some fabrics are made of a blend of natural and synthetic fibres. All textiles used in shoe production must be backed with another material, usually cotton sheeting or drill, or double woven in such a way to provide the necessary weight or thickness required of shoe uppers and lining.

Characterized by a wide colour selection and lightness; used mainly for summer and fashion footwear.

SYNTHETIC

The term is used to describe a whole range of man made leather like materials. The base for these fabrics are either knitted or woven cotton in the form of sheeting, drills or satens. To these a coating of synthetic resin is applied. The most commonly used coating is vinyl, sometimes known as PVC. Colours, types and finishes and embossing that can be given to the coated fabrics are unlimited and the appearance and feel can be that they are very difficult to tell from leather. Coated fabrics, like texlites, have to be further processed with a backing, to give the weight and thickness required.

Used for a wide spectrum of shapes, easy to care for, suitable for rainy weather. PVC, PU, rubber, leatherette, polymers - materials which have similar look as leather but their characteristics do not measure up to the qualities of natural leather as far as breathing, absorption, flexibility

is concerned; synthetics are suitable in combination with breathable linings and new materials such as PVC and PU. New options in colour and shapes inspire a rise of new designs especially in young fashion. Besides already mentioned characteristics, which are an advantage for designing, the next obvious advantage is their low price.

Polymers - are synthetic hides, which in their look and physical characteristic mimic natural hides. They are also very easy to care for.

Rubber - has similar characteristics as synthetic materials; is used for special safety work boots.

Combined materials - are used mainly in sport footwear enabling endless colour and design variations.

Waterproof membrane - this special material provides water resistance and breathability to footwear (for example Gore-Tex); specially used for hiking and sport footwear.

B. Lining material

LEATHER

Hygienic, comfortable and flexible.

TEXTILE

Suitable for winter footwear its good thermal insulation qualities.

SYNTHETIC

Easily cared for, easily put on; limited airflow which can cause higher perspiration.

C. Soling material

LEATHER

Has an elegant look, is light; solely designed for interiors; scraps off easily; not suitable for wet conditions.

RUBBER

Resistant to wear, flexible, suitable for any kind of weather; has excellent thermo- insulation characteristics and is easy to care for.

SYNTHETIC

Flexible, easy to care for; average resistance to wear; average thermo insulation qualities; slips in difficult terrain; not overly flexible.

D. Adhesive used in footwear manufacture

Adhesive used for soling materials can be divided into the following way in broad:

1. Water based adhesive

These types of adhesive consist of various type of natural and synthetic polymers dispersed or emulsified in water.

These types are mainly natural rubber latex and synthetic latices.

2. Solvent based type

This type of adhesive consists of various natural and synthetic polymers dissolved in the organic solvents like petroleum, ketone or chlorinated solvent.

These type are mainly rubber solution, Polychloroprene solution and polyurethane solutions.

3. Hot melts

These are 100% solid adhesive available in rod, block or pellet form. Several basic types are used:

Types	Typical application temperature range
Polyamide	130-240 C

Polyester	200-240 C
Ethylene vinyl acetate	100-190 C
Thermoplastic rubber based	100-150 C

4. Cyanoacrylates (super glues)

This is a solvent free liquid which has fast bonding properties.

5. Pressure sensitive

Pre-applied to materials as a continuous coating, sometimes protected by release paper. It is also available as 'double side tape.

E. Materials in Non Visible shoe components

A good deal is expected of a pair of shoes. They must keep feet dry and warm in winter, cool in summer and provide adequate protection to maintain good foot health at all times. In order to make a shoe stand up to such heavy demands, there are many non-visible components build into a shoe that are its real backbone.

Toe puffs

The main purpose of introducing special materials in the toe area is to provide shape retention. To protection is secondary except for safety box toes on industrial footwear. Such materials are called toe puffs. They may be hard, soft, straight or wing-tipped and made from variety of materials and chemicals.

Toe puffs could be made by Leather, Leather board, Fibre board, Paint-on liquid, Solvent activated materials, Thermoplastic materials, Filmic and pre-moulded plastic types.

Counters

A counter is a re-inforcement in the back part of the shoe placed between the upper and quarter lining. They help the shoe keep its shape and also provide support for the foot. They can be made of chemically treated fibre-board or textile.

Interlinings

Textiles with a napped surface are often used to provide additional plumpness to the finished shoe in the vamps and quarters areas, particularly for flight weight leather.

Insoles

The insole is the foundation of the shoe to which is anchored the upper, heel and outsole. No matter how light a substance fashion may demand, it is the basic component on which the whole shoe is build. Insole therefore have a strong bearing on wear, comfort, shape retention, foot health and appearance. Leather is still an important insole materials, particularly in men's high grade shoe, but in women's fashion shoes, where lightness and flexibility are most important, man-made insoles are in great but are used because of their suitability for the purpose, having been made to meet specific demands.

Shank and shank board

Shank s are mainly made by the stainless steel and attached with the shank board by either tack or by adhesive. It could be attached also by grooping of the shank board.

F. Materials in trims

Fabrics used for the decoration and trimming of footwear are endless. Shoe ornamentations comprise bows, buckles, buttons etc, and their application varies according to the dictates of the fashion. They are made from textile as well as plastic, glass, metal etc. There are some which combine decoration and functional use such as buckles, laces, eyelets etc.

Common and Materials in vogue

A comprehensive comparison shows the traditional shoe materials and the materials

in vogue:

Components	Commonly used materials	Materials in vogue
Upper	<ul style="list-style-type: none">• Leather• Synthetic	<ul style="list-style-type: none">• Textile• Denim• Jute materials
Lining	<ul style="list-style-type: none">• Leather• Fabrics• Synthetic	<ul style="list-style-type: none">• Textile• Jeans
Soling materials	<ul style="list-style-type: none">• Rubber• PU• PVC etc	<ul style="list-style-type: none">• Wood• Metal

Part 5

Product Making

Product range building system

Product development in footwear fashion is a process of developing "a range of product." The main stage of the range building system are-

Stage 1: Pre-design stage

Objectives:

- Analyze the market and fashion
- Segment the market or target group

Analyze the market trend and fashion

Fashion is driving force behind consumer buying. But fashion itself is shaped by dominant culture as well as economic and political forces of the time. Fashion has also been a globalize phenomenon long before the term 'globalization' came into being. What happens in the west in terms of fashion trends eventually tickle into the east determining the general flow of style while meshing with local flavors. The Bangladeshi fashion scene, though directly influenced by trends in neighboring countries, has not been completely immune to the catwalk of Milan or Paris.

Today's Bangladeshi ladies are very much aware about fashion. Though most of people wrongly use the term fashion only to describe high fashion but the changing of their behavior also come out in light. Today's teenagers accepted new design so early and even it is also true for the aged women. The socio economic consideration also changed their pattern of thinking. Now sleeveless fashion is very common in our town area. Wearing jeans by the young women is very available.

Not only in dress fashion but also in shoe or sandal the similar description also true. That's why the various color of sandal is available in the market. The traditional BLACK or RED sandal replaced by the hundred of color. Not only color but also in materials. Now-a-days the materials that used in dress making also used in shoe making.

Segment the market and target group

According to my project it should be define the customer group of my product though I was assigned for making the fashionable ladies sandal. The target group should be thus those women who are very much fashion oriented and adopt new fashion.

The product that I made is for the following target group:

Product Number: 01		
Footwear type: Ladies Sandal		
SI no	Segmentation criteria	Target group
01	Age	Teen age (13-19)
02	Socio-economic group	Higher middle class and above
03	Distribution area	Town area/advanced area
04	Educational status	High school and college level
05	Purchasing behavior	Specialized shoe shop/chain store/fashion house
06	Acceptance duration	Early

07	Purpose of the purchasing	Everyday usage
08	Taste of the target group	Freestyle but classical
09	Retail price level	250-400

| Product Number: 02

Footwear type: Ladies Sandal

SI no	Segmentation criteria	Target group
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■ 101	Age	Teen and above (13-26)
02	Socio-economic group	Higher middle class and above
03	Distribution area	Town
04	Educational status	High school, college and university level
! 05	Purchasing behavior	Specialized shoe shop/chain store/fashion house
06	Acceptance duration	Early
07	Purpose of the purchasing	For matching when using jute bag/dress matching
W	Taste of the target group	Free style
109	Retail price level	300-500

Product Number: 03

Footwear type: Ladies Sandal

SI no	Segmentation criteria	Target group
01	Age	Above 30
02	Socio-economic group	Middle class and above
03	Distribution area	Town
04	Educational status	Educated
05	Purchasing behavior	Specialized shoe shop/chain store/fashion house
06	Acceptance duration	Early
07	Purpose of the purchasing	Occasional usage
08	Taste of the target group	Free style
09	Retail price level	250-350

Product Number: 04

Footwear type: Ladies Sandal

SI no	Segmentation criteria	Target group
01	Age	13 to above
02	Socio-economic group	Middle and above
03	Distribution area	Town
04	Educational status	Educated or not
05	Purchasing behavior	Specialized shoe shop/chain store/fashion house
06	Acceptance duration	Early
07	Purpose of the purchasing	Daily usage
08	Taste of the target group	Classical
09	Retail price level	300-500

Preparing Story or theme board:

A story board is a summary of collection's inspiration and theme. It's a design tool that will help remain focused and consistent as the line develops. It's also a great communication aid when explaining designer's vision to others (retailers, media etc.). Magazine tears, fabric swatches, old photos, buttons, ribbons; basically any visual reference desire are mounted onto a hard board. A story board should have a title, like a book or film.

Pic: Story board of the project

Brainstorm product outline

A design sketch is a form of visual communication so depending on who needs to understand it, the sketch may need to be quite detailed. If communicating to a pattern maker, samplemaker, contractor or retailer, the sketch should show all seam lines, topstitching, design details and fabric types.

Finalizing the product design:

The following four design are finalize for my project work.

Fig.:

Stage B: Design Stage

This creative work includes:

1. Selecting or modifying footwear last
2. Selecting or designing of bottom component
3. Cutting of paper patterns for footwear upper styles, insoles etc
4. Selecting upper materials, colors etc to the products
5. Planning for production method

1. Selecting or modifying footwear last

most shoes are made to a last. This is a foot model with dimensions and shape imilar to the anatomical foot but sufficiently different to not be exact. Shoe fit and jsome extent the last influences its durability.

Fig: Last

'The close relationship between a man and his shoe maker was based on the shared secret of the client's measurements. The statistics of clients were never disclosed.'

Traditionally before mass production, the original shoemaker started the process by taking a footprint outline of the sole. He whittled or chiselled a wooden last from the print. A last ('laest'¹, Old English meaning footprint) was traditionally made from wood but are now available now in metal or plastic. They are complex structures made from many measurements (statistically determined). Lasts are not the same size and dimensions of the anatomical foot but instead an abstract form with specific functions. It is usually deeper in the midfoot region, has a sharp 'feather edge' where the upper surface meets the sole, is clipped in along the topline (around the ankle) and is flaired over and extended in the toe region. This provides shape, which applies appropriate tension when the shoe distorts to contain the loaded foot. Lasts provides a working surface on which flat leather components can be given plastic form. The physical dimensions accommodate the foot during activity and the last contains contemporary fashion and styles such as toe shape. To allow the last to be removed from the shoe they are often hinged around the instep. Shoe lasts are not made to resemble feet but instead to suit the shoe manufacture. Modern lasts are totally unlike the foot with the sole of the last, flat in order to assist in manufacture. Shoe making was classified under three headings: turned shoes, welted shoes and through-seam shoes.

Turned shoe

The turned shoe is made inside out with only an outset sole between the foot and the ground. The upper and soles are very flexible. The last is designed in a single size and then a set is made in the range of sizes and widths in which shoes are to be manufactured. Marked sizes will vary slightly from one manufacturer to another. No longer a popular technique.

Welted Shoes

Any construction using a welting, either as an integral part of the construction or simply for imitative effect.

Fig:

Features built into a last include: Measurements

The majority of measurements are volume rather than the traditional length and width associated with shoe fit.

Throat opening

The distance from the vamp point to the back seam tuck. Length

The length measurement of the foot from the back of the heel to the tip of the longest toe.

Foot Girth

There are four girth and circumference measurements taken on a last. These are the ball, waist, instep and heel (back of heel to instep). Measurement requires careful assessment of the foot, which cannot be accomplished with the same precision as linear measurements. The modern last maker uses precision instruments to determine girth but the old shoemakers used the hand span to this same effect. Aspects of the foot were measured against the shoemaker's hand, the ball of the foot was compared to the girth between the thumb and the middle finger. The instep was measured between the thumb and the little finger. This method was subject to enormous variations depending upon the size of the shoemaker's hand.

- Ball girth This is the girth measurement around the ball of the last to determine the width and volume allowance inside the shoe.
- Waist girth The girth at the waist on the last.
- Instep girth The circumference around the foot at the instep.
- Heel girth The distance around the foot from the rear base of

the heel to the top of the instep.

Fig:

Recede Toe

This is the part of the last, which projects beyond the tip of the toes forming the rounded contour of the front of the shoe. A tapering recede such as in today's sharp shoes increases the overall length of the shoe. In a poorly designed last the recede may encroach on the toes increasing tension on the ends of the toes. This may be referred to as tight lasting.

Heel-to-ball

This dictates the position of the hinge of the forefoot (metatarsal phalangeal joints) and the widest part of the shoe (across the metatarsal heads).

Toe Spring

This describes the elevation of the undersurface of the sole at the toe to give a slight rocker effect to the shoe. The amount of toe spring (built into the last) depends on the shoe style, sole thickness and heel height. This is built into the last design and compensates for the stiffness of the footwear and provides a stress free take off into propulsion. The more rigid the soling material the greater the toe spring. Many shoes will also display a slight heel spring.

Tread

This describes the width across the sole under the ball of the last and it should correspond to the dimension of the feet. The tread point on the last represents the bottom forepart just behind the ball and in contact with the base plane.

Fig:

Flare

This describes the curve or contour of the last. The swing is determined by the position of the forepart when the last is bisected longitudinally forwards from the centre of the heel arc. With In inflare lasts there is an inward medial swing to the forepart and most modern shoes are made on an inflare last (banana last) because it is thought shoes are more comfortable. An outflare last describes the opposite with the swing lying to the lateral side of the forepart. Sometimes used in bespoke footwear for infants with diagnosed foot development problems. Straights last describe neither an inflare or outflare preference. The long axis of the last when drawn through the bisection of the heel curve describes two equal longitudinal halves. The normal foot has a straight axis and hence straight lasted shoes can be worn on either foot. Prior to the introduction of machinery to make heeled shoes it was common to have shoe made with a straight flare until the turn of the twentieth century.

2. Selecting or designing of bottom components

Fig:

The term sole derives from 'solea' a Latin word meaning soil or ground.

Insole (inner sole)

A layer of material shaped to the bottom of the last and sandwiched between the outsole (or midsole) and the sole of the foot inside the shoe. The insole covers the join between the upper and the sole in most methods of construction and provides attachment for the upper, toe box linings and welting. This provides a platform upon which the foot can operate and separates the upper from the lower. The insole board is necessary in shoes that are constructed using cemented or Goodyear welt techniques because it is the attachment for upper and lower components. The majority of insole boards are made of cellulose and are treated with additives to inhibit bacterial growth. Athletic footwear will often have a sockliner, a piece of material placed over the top of the insole board (glued in position or removable).

Outsole

This is the outer most sole of the shoe, which is directly exposed to abrasion and wear. Traditionally made from a variety of materials, the outsole is constructed in different thickness and degrees of flexibility. Ideal soling materials must be waterproof, durable and possess a coefficient of friction high enough to prevent slipping. Leather has poor gripping capabilities and synthetic polymers are much preferred. There are also an infinite variety of surface designs. Extra grip properties can be incorporated in the form of a distinctive sole pattern with well-defined ridges. Alternatively they can be moulded with cavities to reduce the weight of the sole. These cavities need to be covered with a rigid insole or can be filled with light foam to produce a more flexible sole. In some cases two or more materials of different densities can be incorporated into the sole to give a hard wearing outer surface and a softer, more flexible midsole for greater comfort. Synthetic soling materials will off the physical property of dampening down impact levels (shock attenuation).

Shank

The shank bridges between the heel breast and the ball tread. The shankpiece or shank spring can be made from wood, metal, fibreglass or plastic and consists of a piece approximately 10cm long and 1.5 cm wide. The shank spring lies within the bridge or waist of the shoe, i.e. between heel and ball corresponding to the medial and lateral arches. The shankpiece reinforces the waist of the shoe and prevents it from collapsing or distorting in wear. The contour of the shank is determined by heel height. Shoes with low heels or wedged soles do not require a

shank because the torque between the rear and forefoot does not distort the shoe.

Heel

The heel is the raised component under the rear of the shoe. Heels consist of a variety of shapes, heights, and materials and are made of a series of raised platforms or a hollowed section. The part of the heel next to sole is usually shaped to fit the heel, this is called the heel seat or heel base. The heel breast describes front face of the heel. The ground contact section is called the top piece. Heels raise the rear of the shoe above the ground. A shoe without a heel or midsole wedge may be completely flat. When the heel section sits lower than the forefoot the style is called a 'negative heel'.

Welt

The strip of material which joins the upper to the sole. Most shoes will be bonded by Goodyear-welted construction. Some shoes use an imitation welt stitched around the top flat edge of the sole for decorative purposes, but it is not a functional part of the shoe.

3. Cutting of paper patterns for footwear upper styles, insoles etc

Although there are variations, the following headings cover the basic stage which form in this stage, once the design idea/style has been determined:

A. Forme cutting

The forme is the flat representation of one side of the upper surface of the last. It is the basis of the shoe upper pattern. There are many method of producing a method of forme. Some of the most common are masking tape (details is in APPENDIX), plastic vacuum shell and slotted paper. The most popular method is taped forme and in my project work I used this type of method.

Once a forme has been produced it should be checked before going any further. In particular, the top and bottom draft line measures of the forme should be compared with those of the last. In the case of the slotted forme, this can fairly easily be laid against the last and lined up with the centre lines and feather edge for the checking. With other type of forme, accurate measurement using a tape can provide an equivalent check. From the inside and outside formes, the MEAN FORME is produced (details in APPENDIX). This is basically an average of the two formes. However, where the differences are significant they are sometimes retained e.g. in the forepart and waist bottom edge.

B. Standard Construction

The next step is the production of the standard. The standard is a kind of "blueprint" for the upper design. It is normally a plan of the upper viewed from one side, but sometimes e.g. with some ladies court shoes. A wholecut (opened out), standard is produced.

A standard is based on four major items: The mean form, A design, Lasting allowance, Stiffener allowance for lining. When constructing the standard the following matters should be considered:

- Movement of the upper during lasting and its effects upon the shape and positioning the seams and upper features
- Foot anatomy, the position of prominent bones and joints
- Economy of the materials; creating sections which will make efficient use of materials i.e. without excessive material wastage
- Method of construction (details in APPENDIX); amount of allowance/s to be added
- Foot entry; is there sufficient opening and adjustment.

C. Sectional Pattern

From the standard, sectional patterns are produced for every part of the upper, lining. These are sometimes known as working patterns.

When cutting the sectional patterns all necessary allowance for such items as folded edges and seams must be added. Stitch marks should also be included.

It should be noted that occasionally a pattern cutter may sketch the design onto the covered (by tape or plastic) last and then cut the upper sections directly from this, flattening each individual section separately. Allowances are then added as necessary. With this method, there is no mean form and no standard, which can be inconvenient if alterations are later necessary.

In my project, both methods are applied as per simplicity.

4. Selecting upper materials, colors etc to the products

All parts or sections of the shoe above the sole that are stitched or otherwise joined together to become a unit then attached to the insole and outsole. The upper of the shoe consists of the vamp or front of the shoe, the quarter i.e. the sides and back of the shoe, and the linings. Uppers are made in a variety of different materials, both natural and synthetic. Leather became the obvious cover of choice because it allowed air to pass through to and from the skin pores thereby

providing an opportunity to keep the feet, cool. The plastic properties of animal skins further help mould the shoe to the foot beneath. The ability for leather to crease over flexor surfaces facilitate the function of the foot. Ironically synthetics used as uppers display elastic properties, which mean the shoe upper never quite adjusts to the foot, shape in the same way as natural leather. Synthetics are cheaper to mass-produce and are now found in most mass produced footwear. Synthetic uppers are more waterproof. Woven fabric such as cotton corduroy can be used as uppers. Classified as breathable fabrics these help aeration.

In quality shoes the quarters and vamps are lined to enhance comfort and durability. Linings may consist of various materials ie leathers, fabrics, and manmade synthetics. The lining on the insole segment is called 'the sock' and may be full-length, three-quarter or just the heel section. Many linings are made of synthetic material and are usually confined to the quarters and the insock.

The project demand for the upper materials that are materials using in vogue or not common in the sandal production.

According to the product outline, the upper and lining materials are in follows: **Product no: 1**

The upper materials selecting for the product no 1 is denim cloth. The purpose of the selecting denim cloth is-

- The teenage girls are very much fashionable for their dress and most of them are using sandal by matcing with their dress. The most fashionable teenage girl wear jeans pant and if a sandal product by the same cloth should be attractive for them.
- The tensile strength, tear strength of the cloth are reasonably good enough compare with the other common materials using for sandal production.

The lining of the sandal is leather as for the shape retention and for the transferring perspiration produce by the foot.

Product no: 2

The upper materials selecting for the product no 2 is coarse cloth made of jute. Today's fashion trend is to using the gunny bag as their fashion accessories. The young women could choice the materials as their sandal for the occasional purpose when they using coarse cloth.

The lining material is also cloth as for the price range. The leather using for the lining should increase the price of the product. As the product is occasional purposes then the price range should be affordable.

An accessory also used for the decorative purposes as well as serve the fashion.

Product no: 3

The upper material selecting for the product no 3 is velvet cloth. Velvet cloths are very fashionable.

The lining is leather as the thickness of the velvet cloth is lower than that of other upper materials.

Product no: 4

The upper material selecting for the product no 4 is mesh leather. Here I do not use lining as the leather is well thickened.

5. Planning for production method

Product no: 1 & 2

SI no	Name of operation	Way of application
Bottom component preparation		
Insole		
01	Insole and shank board cutting	By hand
02	Shank board skiving	By roughing machine

03	Shank attaching with shank board	Eyeleting machine
04	Insole and shank board attaching	By hand
05	Insole moulding	Insole moulding machine
06	Insole beveling	Insole beveling machine
07	Side covering of the insole by using the upper materials	By hand
Outsole		
01	Cutting of the TPR sheet	By anti-cutter
02	Roughing	Rouging machine
03	Priming of the welt and sole	By hand
04	Drying of the primers	
05	Adhesive applying	By brush
06	Drying the adhesive	
07	2 nd coat of the adhesive	By brush
08	Heat reactivate	Heat reactivation machine
09	Welt setting with the sole	By hand

10	Heel covering with the upper materials	By hand
11	Sole and heel attaching	By hand
Upper preparation		
01	Cutting of the upper and lining	By anti-cutter
02	Cutting of the backing materials	By hand
03	Applying the backing with upper	By hand
04	Applying adhesive for folding	By hand
05	Folding the upper materials	By hand
06	Attach lining with the upper materials	By hand
07	Stitching lining with the upper materials	Post be sewing machine
08	Trimming the upper lining materials	By hand

Lasting		
01	Insertion of the toe-puff materials	By hand
02	Rouging the lining materials if needed	Roughing machine
03	Stitching the upper and lining in lasting area	Post bed sewing machine
04	Applying the latex	By brush
05	Drying the adhesive	
06	Hand lasting	By hand
Sole attaching		
01	Roughing the lasting margin area	Roughing machine
02	Cleaning the dust	By hand
03	Apply primers into the TPR sole	By sponge
04	Drying the primers	
05	1 st coat of PU both in lasted upper and sole	By brush
06	Drying the adhesive	
07	2 nd coat of the PU adhesive	By brush
08	Heat reactivation	Heat reactivation machine
09	Upper positioning on the sole	
10	Sole pressing	Sole pressing machine
11	Chilling	Chilling machine
12	De-lasting	By hand
13	Heel nailing	Heel nailing machine

14	Top lift insertion	By hand
Finishing		
01	Insertion of the socks	By hand
02	Cleaning the shoe	By hand
03	Sole cleaning	By hand
04	Insertion of the tissue papers	By hand

05	Shoe stick use if needed	By hand
06	Shoe boxing	By hand

Product no: 3

SI no	Name of operation	Way of application
Bottom component preparation		
Insole		
01	Insole board and EVA sheet cutting	By hand
02	Attaching the insole board and EVA	
03	Insole covering by using upper materials	
04	Punch into the insole	By hand
Outsole		
01	Cutting of the wood	By hand
02	Roughing	Rouging machine
03	Roughing by the emery paper	By hand
04	Applying the burnish (1 st coat)	By hand
05	Drying	
06	Applying the burnish (2 nd coat)	By hand
07	Cutting the Crepe sheet	By anti-cutter
08	Roughing the crepe sheet	Roughing machine
09	Applying adhesive both in crepe sheet and wooden sole	By brush
10	Attaching the crepe and sole	By hand
11	Pressing by the welt pressure	
12	Chilling the sole	
Upper preparation		
01	Cutting of the upper and lining	By anti-cutter
02	Cutting of the backing materials	By hand
03	Applying the backing with upper	By hand
04	Applying adhesive for folding	By hand
05	Folding the upper materials	By hand
06	Attach lining with the upper materials	By hand
07	Stitching lining with the upper materials	Post be sewing machine
08	Trimming the upper lining materials	By hand
Lasting		
01	Insole attaching with last	
02	Rouging the lining materials if needed	Roughing machine

Finishing		
01	Cleaning the shoe	By hand
02	Sole cleaning	By hand
03	Insertion of the tissue papers	By hand
04	Shoe boxing	By hand

6. Materials & technical specification of the product

Specification Sheet product no 1:

At a glance

Recommended use:	
Upper: Denim cloth	Lining: Leather
Outsole: TPR	Insole: Cellulose board
Socks: Denim cloth	

Material Specification

Specification for UPPER and LINING

Component	Material	Thickness	Colour	Origin	Finish	Print
Upper	Denim cloth	1 mm	Navy blue	Voven		
Lining	Leather	0.5 mm	Beige	Sheep	—	—

Note:

Specification for SOLE

Material	Construction	Colour	Thickness	Wall height	Wall thickness	Shape of sole bottom	Rib width
Thermoplastic rubber		Black	5 cm				

Note:

Specification for INSOLE

Component	Material	Type	Construction	Colour	Thickness
Insole board	Cellulose board		Non-woven	White	2.6 mm
Shank board	Cellulose board		Non-woven	Gray	3.1 mm

Note:

Specification of SHANK

Material	Type	Shape	Length	Width	Thickness	Flute type	Attaching process
Stainless steel	Prone	Rectangular	11.5 cm	1.2 cm	1.5 mm	Single	By rivet

Note:

Specification of WELT

Specification	Figure
Material: TPR	
Colour: Black	
Width: 3 mm	
Thickness: 4 mm	
Placement: Inner ball point to outer ball point	

Note:

Specification for SOCK

Type: Full sock	Material: Denim cloth
-----------------	-----------------------

Specification for HEEL

Material	Type	Color	Heel height	Top lift		Attaching process
				Material	Colour	
Messonite	Luis	White		Messonite	Black	By nailing
If covered heel						
Material		Thickness	Color	Covering process		
Denim cloth		1 mm	Navy blue	By adhesive		

Note:

Specification for TOE PUFF

Material	Thickness	Color	Type
Impregnated material	.55 mm	White	One side adhesive

Note:

Specification for ACCESSORIES

Component	Location	Material	Type	Colour	Thickness	Shape
Foam	Socks bed	EVA	Single layer	White	3.10 mm	Sock shape

Note:

Technical Specification

Specification for REINFORCEMENT

Location	Construction	Material	Adhesion	Thickness	Colour	Attaching process
For upper reinforcing	Woven	Cloth	One side adhesion	0.6 mm	Black	By adhesive
Folding reinforcement	Woven	Cloth	One side adhesion	0.8 mm	White	By adhesion

Note:

STITCHING Specification

Needle			Thread				Reinfor
System	Number	Point	Material	Colour	Twist	Ply	
134	110	P	Cotton	Beige	Z	2	No

Note:

Specification sheet for Product no: 2

At a glance

Recommended use:	
Upper: Coarse cloth made by jute	Lining: Cloth
Outsole: TPR	Insole: Cellulose board
Socks: Denim cloth	

Material Specification

Specification for UPPER and LINING

Component	Material	Thickness	Colour	Origin	Finish	Print
Upper	Coarse cloth made by jute	1.10 mm	White	Woven		
Lining	Cloth	0.5 mm	White	Woven	—	—

Note:

Specification for SOLE

Material	Construction	Colour	Thickness	Wall height	Wall thickness	Shape of sole bottom	Rib width
Thermoplastic rubber		Black	5 cm				

Note:

Specification for INSOLE

Component	Material	Type	Construction	Colour	Thickness
Insole board	Cellulose board		Non-woven	White	2.6 mm
Shank board	Cellulose board	—	Non-woven	Gray	3.1 mm

Note:

Specification of SHANK

Material	Type	Shape	Length	Width	Thickness	Flute type	Attaching process
Stainless steel	Prone	Rectangular	11.5 cm	1.2 cm	1.5 mm	Single	By rivet

Note:

Specification of WELT

Specification	Figure
Material: TPR	
Colour: Black	
Width: 3 mm	
Thickness: 4 mm	
Placement: Inner ball point to outer ball point	

Note:

Specification for SOCK

Type: Full sock	Material: Coarse cloth made by jute
-----------------	-------------------------------------

Specification for HEEL

Material	Type	Color	Heel height	Top lift		Attaching process
				Material	Colour	
Messonite	Luis	White		Messonite	Black	By nailing
If covered heel						

Material	Thickness	Color	Covering process
Jute	1.1 mm	Whits	By adhesive

Note:

Specification for ACCESSORIES

Component	Location	Material	Type	Colour	Thickness	Shape
Foam	Socks bed	EVA	Single layer	White	3.10 mm	Sock shape
Decorative ornaments	Vamp area	Metal		Combinatio n		Round

Note:

Technical Specification

Specification for REINFORCEMENT

Location	Constructio n	Material	Adhesion	Thickness	Colour	Attaching process
For upper reinforcing	Woven	Cloth	One side adhesion	0.6 mm	Black	By adhesive
Folding reinforcement	Woven	Cloth	One side adhesion	0.8 mm	White	By adhesion

Note:

STITCHING Specification

Needle			Thread				Reinforce Y/N
System	Number	Point	Material	Colour	Twist	Ply	
134	110	P	Cotton	Beige	Z	2	No

Note:

Specification for Product 3

At a glance

Recommended use:

Upper: Velvet cloth	Lining: Leather
Outsole: Wooden	Insole: Cellulose board
Socks: Velvet cloth	

Material Specification

Specification for UPPER and LINING

Component	Material	Thickness	Colour	Origin	Finish	Print
Upper	Velvet cloth	.4 mm	Black	Woven		
Lining	Leather	.9 mm	Beige	—	—	—

Note:

Specification for SOLE

Material	Construction	Colour	Thickness	Wall height	Wall thickness	Shape of sole bottom	Rib width
Wooden	—	Black	5 cm				

Note:

Specification for INSOLE

Component	Material	Type	Construction	Colour	Thickness
Insole board	Cellulose board		Non-woven	White	2.6 mm

Note:

Specification for ACCESSORIES

Component	Location	Material	Type	Colour	Thickness	Shape
Foam	Insole	EVA	Single layer	White	3.10 mm	Sock shape

Note:

Technical Specification

Specification for REINFORCEMENT

Location	Construction	Material	Adhesion	Thickness	Colour	Attaching process
For upper reinforcing	Woven	Cloth	One side adhesion	0.6 mm	Black	By adhesive
Folding reinforcement	Woven	Cloth	One side adhesion	0.8 mm	White	By adhesion

Note:

STITCHING Specification

Needle			Thread				Reinfc
System	Number	Point	Material	Colour	Twist	Ply	
134	110	P	Cotton	Beige	Z	2	No

Note:

Specification for product 4:

At a glance

Recommended use:	
Upper: Mesh leather	Lining: None
Outsole: Wooden	Insole: None
Socks: none	

Material Specification

Specification for UPPER and LINING

Component	Material	Thickness	Colour	Origin	Finish	P
Upper		1.10 mm	White	Woven	—	—

Note:

Specification for SOLE

Material	Constructio n	Colour	Thickness	Wall height	Wall thicknes s	Shape of sole bottom	Rib width
Wooden	—	Black	5 cm				

Note:

Part 6

Products Photo

Part 7

Costing & Quality

Costing of the Product

Product number 1:

A. Material Costing

SI no	Items	MU	Unit Price mo	Amount	Cost (Tk.)
Upper					
01	Denim cloth (upper, insole cover and socks)	Sft.	30	1.5	45
Total Upper					45
Lining					
02	Cow Beige leather	Sft	40	1	40
Total lining					40
Sole					
03	TPR	Sht	6	2	12
04	Heel	Pc	5	2	10
05	Welt	Pc	3	2	6
Total Sole					28
Insole					
06	Insole board	Sht	15	1	15
07	Shank board	Sht	10	1	10
08	Steel Shank	Pc	5	2	10
09	Eyelet	Lbs	0.5	2	1
Total insole					36
Reinforcement					
10	3 mm reinforcement tape 50 mm/roll, 38 prs/roll	roll	55	0.026	1.43
11	15 mm cotton tape 50 mm/roll	roll	250	0.0042	1.05
12	Toe puff, 100*150 cm/sheet	Sht	625	0.005	3.12
Total reinforcement					5.60
Adhesive & Others					

13	M. E.K 402	Kg	87	0.0015	0.1305
14	Sole edge colour	Kg	203.05	0.001	0.20
15	P.U. Cement	Kg	138.15	.003	0.414
16	Latex 60 Drc	Kg	65.00	0.0129	0.85
17	Thread Nylon 30/3, 1450 yds/cone, BLK	Mtr	70	.01	0.70
18	Needle 134 LR, 120/19	Pc	11	1	11.0
19	Emery No-2	Mtr	2200	.0005	1.1
20	Emery No 60	Mtr	1700	.0005	0.85
Total Adhesive and others					15.24
Shoe Box					
21	Box	Pc	8.50	1	8.50
22	Tissue Paper	Pc	1.70	1	1.70
23	Adhesive	Pot	5	1	5
Total Packaging					15.20
Total Materials					185.04
Production cost (100% of material cost)					185.04
Total cost					290.08
					290.00

Margin (25% of standard cost) : 72.5

Retail Sell Price

: 362.5~362.00

Product no: 02 A. Material Costing

SI no	Items	MU	Unit Price (Tk)	Amount	Cost
Upper					
01	Coarse cloth made by jute (upper, insole cover and socks)	Gz	40	0.25	1
Total Upper					1
Lining					
02	White cloth	Gz	50	0.25	12
Total lining					12
Sole					
03	TPR	Sht	6	2	1
04	Heel	Pc	5	2	H
05	Welt	Pc	3	2	e

Total Sole					21
Insole					
06	Insole board	Sht	15	1	1!
07	Shank board	Sht	10	1	1(
08	Steel Shank	Pc	5	2	1(
09	Eyelet	Lbs	0.5	2	1
Total insole					3<

Reinforcement					
10	3 mm reinforcement tape 50 mm/roll, 38 prs/roll	roll	55	0.026	1.43
11	15 mm cotton tape 50 mm/roll	roll	250	0.0042	1.05
12	Toe puff, 100*150 cm/sheet	Sht	625	0.005	3.12
Total reinforcement					5.60

Adhesive & Others					
13	M. E.K402	Kg	87	0.0015	0.1305
14	Sole edge colour	Kg	203.05	0.001	0.20
15	P.U. Cement	Kg	138.15	.003	0.414
16	Latex 60 Drc	Kg	65.00	0.0129	0.85
17	Thread Nylon 30/3, 1450 yds/cone, BLK	Mtr	70	.01	0.70
18	Needle 134 LR, 120/19	Pc	11	1	11.0
19	Emery No-2	Mtr	2200	.0005	1.1
20	Emery No 60	Mtr	1700	.0005	0.85
Total Adhesive and others					15.24

Shoe Box					
21	Box	Pc	8.50	1	8.50
22	Tissue Paper	Pc	1.70	1	1.70
23	Adhesive	Pot	5	1	5
Total Packaging					15.20
Total Materials					122.54
Production cost (100% of material cost)					122.54
Total cost					245.08
					245.00

Margin (25% of standard cost) Retail Sell Price

61.25

: 306.25^306

Product No 3

A. Material Costing

SI no

Items

MU

Unit Price (Tk)

Amount

Upper

01

Velvet cloth (upper, insole cover and socks)

Gz

60

0.25

Total Upper

Lining

02	Sheep leather	Sft	60	.50	30
Total lining					30
Sole					
03	Wooden + non sleepy	Pr	150	1	150
Total Sole					150

Insole

06	Insole board	Sht	15	1	15
Total insole					15

Reinforcement

10

3 mm reinforcement tape 50 mm/roll, 38 prs/roll

roll

55

Total reinforcement

0.026

Adhesive & Others					
15	P.U. Cement	Kg	138.15	.003	0.414
16	Latex 60 Drc	Kg	65.00	0.0129	0.85
17	Thread Nylon 30/3, 1450 yds/cone, BLK	Mtr	70	.01	0.70
18	Needle 134 LR, 120/19	Pc	11	1	11.0

19	Emery No-2	Mtr	2200	.0005	1.1
20	Emery No 60	Mtr	1700	.0005	0.85
Total Adhesive and others					14.91
Shoe Box					
21	Box	Pc	8.50	1	8.50
22	Tissue Paper	Pc	1.70	1	1.70
Total Packaging					10.20
Total Materials					236.54
Production cost (50% of material cost)					118.27
Total cost					354.81
					354.00

Margin (25% of standard cost)

: 88.5

Retail Sell Price

: 442.5~442.00

Product No 4

A. Material Costing

SI no	Items	MU	Unit	Amount	Cost (Tk)
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			Price (Tk)		
Upper					
01	Leather	Sft	220	0.25	55
Total Upper					55
Sole					
03	Wooden + non sleepy	Pr	150	1	150
03	Tack	Pc	.25	12	3
Total Sole					153
Shoe Box					
21	Box	Pc	8.50	1	8.50
22	Tissue Paper	Pc	1.70	1	1.70
Total Packaging					10.20
Total Materials					218.21
Production cost (25% of material cost)					54.55
Total cost					272.71
					273

Margin (25% of standard cost) Retail Sell Price

: 68.25

: 341.25~341.00

2. Testing of the Product

The chart of the tensile strength of the materials is given below:

Materials	Heel to toe (A)	Perpendicular of A	45 of A	Average
	Kg/width(2To»)	Kg/width(2<?u*)	Kg/width(2Sa»)	Kg/width(£<
Denim cloth	20	10	6	12
Coarse cloth by jute made	70	30	14	38
Velvet	24	18	11	17.6

The chart of the tongue strength of the materials is given below:

Materials	Heel to toe (A)	Perpendicular of A	45 of A	Average
	Kg/width(£-5<>)	Kg/width(2<^>	Kg/width(2-s-<^	Kg/width^
Denim cloth	6	5	5	5.33
Coarse cloth by jute made	10	5	3	6
Velvet	4	4	4	4

Part 8

Recommendation

&

Conclusion

Fashionable ladies sandals are now used not only for fashion. As sandals describe the personality, the socio-economic condition, rank etc then everyone wants prepare themselves with the fashionable item that enhance their beautiful personality. Today's ladies think about the sandal/shoe when she wears fashionable dress.

From my project work, some interesting features are listed out. The recommendation of this project could be described in the following view:

Designing view:

This project shows how a designer can spread his circle. The materials, common in sandal making could change in very effective way. The materials which are commonly used in household work could easily be used in sandal if fulfill the requirement. Mainly two recommendations could be provided by this project work for sandal designers:

1. Cloth (denim and velvet), Jute can easily be used for sandal upper especially for fashionable sandal upper. The socks also can be used by using same materials.
2. The ornaments which are used in the dress making could easily be used in the sandal. This could be used either by stitching or by adhesive. Just look the adhesive colour should not contrast with upper colour.

Production view:

The following recommendation should be delivered in production view:

1. Using adhesive demand more care at the time of production.
2. The heat setting and heat reactivation should be according to the cloth and its varying form materials to material. Heat should be below 70. If outsole is made by wood and it repair by wax then the heat reactivation does not need as the wax molten in the heat.
3. Sole press demand extra care for wooden sole as it could break there is a huge curve. The thickness of the sole should be good enough hold nail if nail used for lasting.

The denim and coarse cloth by jute should be cut according to direction the tensile strength varies rapidly.

Material sourcing view

The materials which are used are very common not in sandal production. But these materials are very available in our local market. Synthetic upper materials could be replaced by Denim cloth and Jute as the synthetic materials are imported from abroad. Similar things happen for the soleing materials. On the other hand Jute cloths, wooden sole all are very

available in our country.

Appendix 1: Methods of Shoe Construction

There are many ways to attach the sole to the upper but commercially only a few methods are preferred. Shoes were traditionally made by moulding leather to a wooden last. Modern technology has introduced many new materials and mechanised much of the manufacture. Remarkable as it may seem the manufacture of shoes remains fairly labour intensive. No matter the type of construction the first stage in construction is to attach the insole to the undersurface of the last. The main operations follow : Lasting describes the upper sections are shaped to the last and insole. Followed by Bottoming, where the sole is attached to the upper. The process of bottoming will determine price, quality and performance of the shoe.

Cement

Alternative names include: 'Stuck on construction' (UK) and the 'Com: Process'.

For lightweight and flexible footwear the outsole is stuck to the upper by an adhesive. Bonwelt is a variation with its distinguishing feature being a strip of welting attached by stitching or cementing to the top edge of the insole. The shoe is then flat lasted. This is not a true welt construction wherein the welt is attached to the rib of the insole.

Goodyear Welt

For high quality dress and town shoes the top section (or welt) is chain stitched to the upper and insole rib at the point where it curves under the last. This is supplemented by a lockstitch outseam bonding the welt and outsole. The outsole is then sewn to the welt around the edge. Goodyear Welt creates heavier less flexible footwear.

Stitchdown

A cheaper method used to produce lightweight flexible soles for children's shoes and some casual footwear describes the upper turned out (flanged) at the edge of the last. This is then stitched to the runner. In some countries it is known as 'veldt' and 'veldtschoen.'

Mocassin

Thought to be the oldest shoe construction this consists of a single layer sec which forms the insole, vamp and quarters. The piece is moulded upwards from Under surface of the last. An apron is then stitched to the gathered edges of vamp and the sole is stitched to the base of the shoe. This method is used for flexible fashion footwear. The imitation moccasin has a visual appearance moccasin but does not have the wrap around construction of the genuine moccas

Moulded Methods

The lasted upper is placed in a mould and the sole formed around it by inject liquid synthetic soling material (PVC, urethane). Alternatively, the sole may be vulcanised by converting uncured rubber into a stable compound by heat and pressure. When the materials in the moulds cool the sole-upper bonding is complete. These methods combine the upper permanently into the sole and so shoes cannot therefore be repaired easily. Moulded methods can be used to make most types of footwear.

Force Lasting

Alternative names include: The Strobel-stitched method (or sew in sock)

Strobel Stitched Method

Force lasting has evolved from sport shoes but is increasingly used in other footwear. The Strobel-stitched method (or sew in sock) describes one of many force lasting techniques. The upper is sewn directly to a sock by means of an overlooking machine (Strobel stitcher) The upper is then pulled (force lasted) onto a last or moulding foot. Unit soles with raised walls or moulded soles are attached to completely cover the seam. This technique is sometimes known as the Californian process or slip lasting.

Appendix 2: Determine procedure of tensile strength

Name of the test: Tensile strength. Norm: SATRA PM

1. Scope:

This method is intended to determine the force required to strength of a material. The method is applicable to all types of leather and is generally not used with any other type of material.

2. Principle:

A synthetic specimen, 100x25 mm, is cut. The two ends thus formed are clamped to the two jaws respectively of the tensile strength tester. The load required to continue the tear is recorded from the dial of the machine.

3. Apparatus and Materials

1. A tensile testing machine with a jaw separation rate of 100 20 mm/min.

2. A cutting device such as a sharp knife or rotary disc cutter for cutting the test specimens.

3. A measuring device.

4. Preparation of the test specimen

1. Cut the nine specimens with the dimensions specified. Three should be cut with their longer edges parallel to the backbone, or along, direction of the material, and three should be cut at 90 to this in the across direction and other three should be 45 angle of the 1st one.

2. Mark the principal direction of the material on each of the test specimen.

5. Procedure

1. Fit two ends of the two side into each of the jaws of the tensile testing machine and slowly move the jaws together until the attachments just touch each other.

2. Operate the tensile testing machine so that the jaws separate at a speed of 100 20 mm/min and record the maximum force obtained in Kgs.

3. Stop the test when a tear reaches the edge of the specimen. The load at which the first sign of tearing is noticed is also marked on the graph.

4. Calculate the arithmetic mean of the maximum force recorded for the test specimens.

6. Test Report

Test report should include

> The origin of the test specimens

> The arithmetic means of the maximum forces calculated.

Thus, Tensile Strength= Tearing Load (Kg)/ material width (cm).

Appendix 3: Determine procedure of Tongue tear strength

Name of the test: Tongue tear strength. Norm: SATRA PM

1. Scope:

This method is intended to determine the force required to tear a material. The method is applicable to all types of leather and is generally not used with any other type of material.

2. Principle:

A 5 mm diameter hole is punched at a point, one-third of the length of the specimen, 75x25 mm, from one end of the central line of the specimen. The leather specimen is then cut into two tongues at right angle to the grain surface for two-third of its length. The ends of the two tongues thus formed are clamped to the two jaws respectively of the tensile strength tester. The load required to continue the tear is recorded from the dial of the machine.

3. Apparatus and Materials

4. A tensile testing machine with a jaw separation rate of 100 20 mm/min.

5. A cutting device such as a sharp knife or rotary disc cutter for cutting the test specimens.

6. A measuring device.

4. Preparation of the test specimen

3. Cut the nine specimens with the dimensions specified. Three should be cut with their longer edges parallel to the backbone, or along, direction of the material, and three should be cut at 90 to this in the across direction and other three should be 45 angle of the 1st one.

4. Mark the principal direction of the material on each of the test specimen.

5. Procedure

5. Fit two ends of the two tongue into each of the jaws of the tensile testing machine and slowly move the jaws together until the attachments just touch each other.

6. Measure the average thickness of the test specimens.

7. Operate the tensile testing machine so that the jaws separate at a speed of 100 20 mm/min and record the maximum force obtained in Kg.

6. Test Report.

Test report should include

> The origin of the test specimens

> The arithmetic means of the maximum forces calculated.

Thus, Tearing Strength= Tearing Load (Kg)/ Materials width (cm).