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Study on the Impact of Locally Manufactured Socks Sold in the Open Market in Bangladesh

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Abstract**—** *Socks are an integral part of textile. It has a high consumer demand. Socks are knitted by the knitting machines to produce. In Bangladesh most of the textile industries are based on basic knit or woven items like mens and ladies dress items. A very few textile industries are engaged in manufacturing socks. There is a huge demand for socks in the local market. In this study around five types of socks were taken and their properties like air permeability, odor and price were observed . It was evident that the local made socks did not have any specifications. The result shows that these socks could be used for local use to meet the demand of the local and national requirement as well export to the international based on their price and quality.*

Keywords**— Socks, consumer demand, knit or woven items.**

I. INTRODUCTION

The 80%xport earnings of Bangladesh comes from the textile sector. The sector is putting an immense effect on the nation's economy.

A rather low profit business with margins only in few cents per pair, socks as a product category generated US $ 7 billion in the USA and US $ 2 billion in Germany in 2015, and even the domestic market has a lot of potential due to the fairly higher retail prices, compared to foreign markets. Looking to share a pie of this billion-dollar product category, companies have invested in socks manufacturing with vision of a bright future [1].

The sector includes knit and woven streams basically. Socks are among from the knit sector. The socks sector is silentlyputting a mark in the textile economy. Natural yarns, regenerated yarns and fully manufactured yarns are used for the production of socks. India and Pakistan and Turkey are experienced in manufacturing socks from regenerated and manufactured (synthetic yarns). Bangladesh is manufacturing socks from cotton, woollen, acrylic, polyester, nylon and recycled cotton fibres.

Bangladesh is exporting socks to Germany, Italy, France, Sweden, Slovenia, Denmark, Japan, Canada and USA to buyers- metro, boomerang International, AydemirTextil, best CalzeSRI,Dutexdor, Inditex, IZOD, NEXT, Primark and Carrefour.Presently, there are anywhere between 15 to 20 new socks exporters in Bangladesh, among them are MAA Socks (with 170 machines), Anan Socks (Welltex Group – 150 machines), Zara Socks (100 machines), Delta Socks (50 machines), Total Socks (50 machines), Virtual Knitting (50 machines), Shenakolan Socks (50 machines), and a few months old A&A Socks (48 machines) [1].

About 15 reputed factories are exporting socks and also supporting the domestic market of Bangladesh.

It is dependent on automatic knitting machines for production, socks has been the mainstay of countries such as Pakistan, China and Turkey. Socks manufacturing is characterized by the use of three automatic equipment – knitting machines, toe closing or linking machines and steaming or boarding machines. In Bangladesh, the new entrants in socks manufacturing have invested in Italian machines while the relatively older manufacturers are working with machines of Chinese and Korean make [1].

Indian and Chinese machines are also used for manufacturing socks in Bangladesh.

Sock knitting machines are highly specialized circular knitting machines specific to the products made on them. These machines can use any type of yarn or fiber to produce hosiery and socks made to shape, size, and performance criteria.

The principles of circular knitting are the same whether the yarn supply, or creel, is at the side or top. Fed from above the knitting elements, yarns move from the creel through guides to stop-motion controls above the machine, then back down through tension controls and yarn-feeding devices to the knitting elements. High-quality products can be produced only when stop-motion and yarn-feeding functions are set properly. The intricate action of knitting—where needles form loops—occurs in the middle of the machine, between the take-up and the yarn-feeding mechanism. In circular weft knitting, needles knit one after the other in sequence, and loops are formed horizontally by needles knitting around the cylinder, forming a tube.

On a single-cylinder machine, the cylinder, with its vertical needles, can make all the stitches needed for sock manufacturing.

The machine's components are the cylinder, the needles, the sinkers, and the dial with transfer bits or jacks.

A sock knitting needle must form a new loop, pull this loop through the previous loop formed, lose the old loop, and pull the new loop to the length specified for the product. Variations in this cycle allow fine-tuning of texture, appearance, and performance to meet product specifications.

Sock fabrics can be made on more than one set of needles. Double-knit fabrics are produced from two sets of needles. Some sock machines have two cylinders, one positioned above the other, to produce constructions such as links-links.

Other machines are specialized to add reinforcement, formed pockets, terry surface on the inside of the sock, and other innovations[2].

Fig.1 Different sock designs [3]

Fig.2 - MAG Air permeability

Till few years ago, Savar group encompassing Supasox Ltd., Smartsox Ltd. and Socks & Tights Ltd. under its umbrella was the only manufacturer of socks in the country catering to the export market. Established by Towhid Samad in 1983, Savar group currently has 200 socks knitting machines and the socks division generates annual revenue of US $ 3 million. "most of the new factories are being run by production managers Figure -2 - MAG Air permeability

trained by us," avers Towhid Samad, Chairman, Savar Group, who is called by many as the 'father of socks industry' in Bangladesh. "due to the boom that Bangladesh is witnessing in the garment industry, a lot of footwear companies have either started sourcing from the country or they have set up their own manufacturing units, because of the local availability of good quality leather. Every footwear buyer will also need socks and even the garment buyers will also need socks which they currently are sourcing from China," highlights Zashim Uddin Khan, Managing Director, Zara Socks, who

believes that the socks exports from Bangladesh will double in the coming two years and cross the mark of US $ 100 million. with a present turnover of US $ 2.5 million, Zara Socks plans to establish a new socks manufacturing unit with 500 knitting machines, for which land has been bought and it will come up by next year. Investment in socks manufacturing is his first venture into the apparel industry and he is presently exporting socks to germany, Italy, France, Sweden, Slovenia, Denmark, Japan, Canada and USA to buyers such as metro, boomerang International, AydemirTextil, best Calze SRI and Dutexdor. "Although cotton socks are the biggest in volumes, we produce socks with all kinds of fibres such as cotton, woollen, acrylic, polyester, nylon and recycled cotton," highlights Zashim Khan[1].

II. Materials and Methods

Sample selection

For the study five sample were collectedrandomly from the open local market. The samples were marked as1,2 and 3.

The samples were observed carefully. At first sample one was worn and used for 02 hours and then checked the odor. after that it was worn for 04 hours and checked the odor. After that the sample1 was worn for08 eight hours and check the odor This method was followed for sample 1. The samples were not giving any odor after wearing for a longtime.Same method was followed for sample-2 and sample 3 as well.Olfactometers [4] are used may be used to measure the product. Here manual process was followed to detect the odor intensity.

For Air permeability test MAG Air permeability tester was as per manual the test method was followed.The cost of the product was also compared with the socks found at the shopping malls.

III. RESULTS AND DISCUSSION

Table -1 - Air Permeability Test Result of Local Socks

Sample 01		**Sample 02**		**Sample 03**	
Result (cc/sec/cm2)	Avg. Result (cc/sec/cm2)	Result (cc/sec/cm2)	Avg. Result (cc/sec/cm2)	Result cc/sec/cm2)	Avg. Result (cc/sec/cm2
181.25		170.83		174.30	
177.77		170.83		174.30	
177.77	178.81	170.83	171.82	176.38	174.71
179.51		174.30		174.30	
177.77		172.22		174.30	

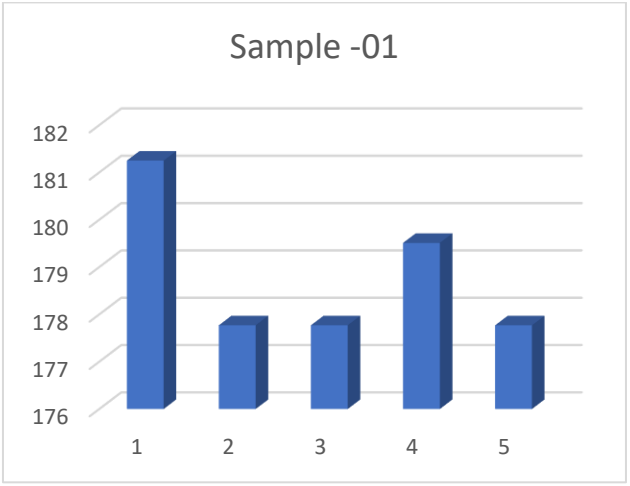

Fig.3 – Graphical Representation of Air Permeability Sample -01

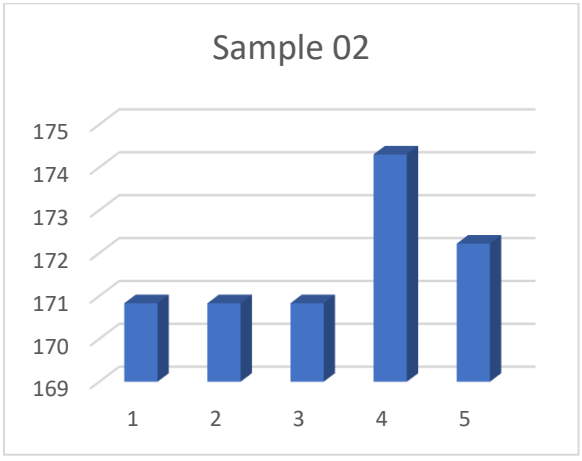

Fig.4 – Graphical Representation of Air Permeability Sample -02

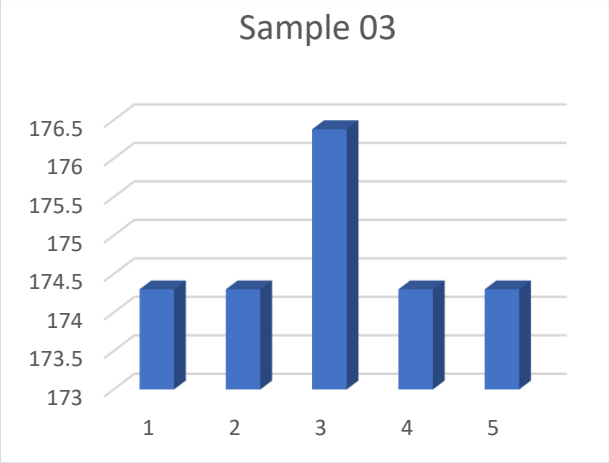

Fig.5 – Graphical Representation of Air Permeability Sample -03

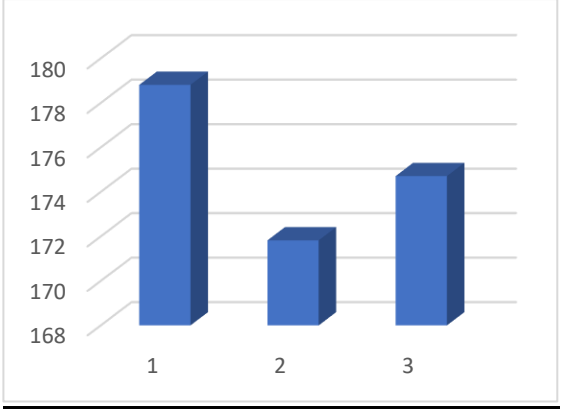

Fig.6 – Graphical Representation of Average result of Air Permeability

Table -2 - Odor Observation at different time

Sample -1	**Remarks**	**Sample -2**	**Remarks**	**Sample -3**	**Remarks**
Worn for 02 hours	No Odor	Worn for 02 hours	No Odor	Worn for 02 hours	No Odor
Worn for 04 hours	No Odor	Worn for 04 hours	No Odor	Worn for 04 hours	No Odor
Worn for 08 hours	No odor	Worn for 08 hours	No odor	Worn for 08 hours	No odor

Table 3- Comparison of prices between open market socks to store socks

Price of a pair of socks sold in open Market	Price of sa pair of ocks sold in open Market
50 Taka /USD.0.58	100.00-150.00Taka /USD.1.17 - 1.76
	 [5]

From Table -1 and figure3 -6 it can be seen that the trend of air permeability was same for all the three and the average shows that the socks are moderate in air permeability. This may be due to the facty that the socks fabric had pores in them.

From Table -2 it was observed that the samples did not have any odor after the time the socks were worn. This could be due to the permeability being good. Beside this the season could also affect the odor as it was the winter season low relative humidity. However, the odor less quality was a positive indication of the local socks.

From Table -3 it is observed that the pair price of the local socks are comparatively cheaper than the branded socks at the departmental stores. This is due to the fsacst that the cost were high only for the brand value and had some improved qua;ity parameters required by the buyers.

IV. CONCLUSION

Th study was based on some property parameters and economic aspect of socks.The study showed that with some little modification and improvement the socks which are sold in the open market can be exported to the international market as well after fulfilling the requirement of national demand. Socks export could be a new sustainable prospect for the development of national economy. The local entrepreneurs could be inspired by the prospect and sustainability of the socks future in Bangladesh. If proper steps and initiation is taken the socks market could really be flourished within a very short time. The factories which are manufacturing socks should also concentrate to use woolen, nylon, regenerated and synthetic fibre from the local origin and the local yarn manufacturer should also support the factories with enhancing their R&D facilities

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