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Applications of mechatronics opportunities in textiles

Abstract

Mechatronics, as a discipline, has been around for a long time in textiles industries, applications such as "Jacquard, Printing, Embroidery, knitting, lace & passementerie strip" of mechatronics opportunities in textiles the combination of mechanical applications with electronic textiles production used by researchers was a good example of integrated design. Indeed, most early workers in which branch of textiles industries which was to become electrical engineering were equally at factures with electronic and mechanical artifacts and combined them in various experiments and products. Mechatronic design in textile Engineering contains a selection of contributions to the advanced search which took place in the introductory sections on the mechatronics concept and design methodology and the impact of advance in technology on the mechatronics concept; the importance of the mechatronic design in the textile industries is highlighted, together with many examples as: Jacquard, Printing, Embroidery, Knitting, Lace &Passementerie Stripes. These include: mechatronics in the design of textile machinery, such as 3D printing and braiding; weaving and intelligent systems / applications of mechatronics for weaving; yarn spinning compensation; texturing; spinning: measurement automation and diagnosis, knowledge-based expert systems; automated textiles manufacture and assembly; and apparel manufacture. This paper unique in which it brings together many applications of mechatronics in textile machinery and system design. In Which respect it will serve as a reference article for inventors and designers as well as for students of textile technology and engineering.

Keywords: mechatronics, textiles, Jacquard, printing, embroidery, knitting, lace, passementerie

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Introduction

Machine learning in textiles industry: is the study of computer algorithms throw files of Textiles like Spinning, Jacquard, Printing, Embroidery, Knitting, and Lace & Passementerie Stripes Which can improve automatically through experience and by the use of data.[1,2] it is seen as intelligent systems parts of artificial intelligence. Applications of mechatronics of Machine learning algorithms build a model based on sample data, known as "training data", in order to make predictions or decisions without being explicitly programmed to do so.[2–4] Applications of mechatronics of machine learning algorithms are used in a wide variety of applications, such as in Industrial textiles Spinning, Jacquard, Printing, Embroidery, Knitting, Lace & Passementerie Stripes, medicine, email filtering data, speech recognition voice, and applications of computer vision, where it is difficult or unfeasible to develop conventional algorithms to perform the needed tasks.[5] A subset of machine learning is closely related to computational statistics, which focuses on making predictions using computers; but not all Applications of mechatronics machine learning is statistical learning. The article of mathematical optimization delivers methods, theories and application domains to the field of Industrial textiles Applications of mechatronics of machine learning. Mechatronics by Data mining is a related field of study, focusing on textiles exploratory data analysis through unsupervised learning.[6,7] Some applications in industrial textiles of machine learning use data and neural networks in a way which mimics the working of a software for biological brain.[2,8,9] In Mechatronics implementations across textiles, machine learning mechatronics for industrial textiles is also referred to as predictive analytics.[10,11]

What is the mechatronics of textiles?[12]

Textile mechatronics,[12] also called mechatronics engineering, mechatronics is an interdisciplinary branch of textile engineering which focuses on the integration of mechanical of textiles with other files such as: electronic, and electrical engineering systems, and also includes a combination of Mechatronics robotics of textiles, electronics, computer science Mechatronics of textiles,[12] telecommunications, systems control Mechatronics of textiles, and product engineering Mechatronics of textiles.[13,14] Industrial Textiles as technology has advanced Mechatronics over time, many subfields of engineering have succeeded in both adapting and multiplying industrial textiles.[12] The goal of mechatronics is to produce a design solution which unites each of these diverse sub-fields as of textiles[12] (such as spinning, weaving, jacquard, printing, embroidery, knitting, Passementerie and apparel lines). Originally, the field of mechatronics of textiles was intended to be nothing more than a combination of mechanics of textiles and electronics of textiles , hence the name as a carryover of advanced mechatronics and electronics; However, as the complexity of technical systems continues to evolve, the definition has been expanded to include more technical of textiles areas.[10]

Physical textiles implementations[12]

Mechanical modeling requires the physical modeling and simulation of complex phenomena of textiles within the scope of the multi-scale and physical textiles approach. This means implementation in textiles and management of modeling and optimization methods and tools, which are combined into a systematic approach. The major is aimed at students in textile mechanics who wish to open their minds to

systems engineering, able to integrate different physics or techniques, as well as students in textile mechatronics who wish to further their knowledge in interdisciplinary optimization and simulation techniques in textiles. The major teaches students in robust for improved visualization methods of structures or many technological systems of textiles, and into key textile modeling and textiles simulation tools used in research and development in Mechanical modeling of textiles. Special courses for indigenous textiles applications (textiles machine in multi-material composites, innovative transducers and actuators, integrated textile systems,) are also proposed to prepare students for the next breakthrough in areas covering materials and textile systems. For some textiles mechatronic systems, the main issue is no longer how to implement a textiles control system of fields such as spinning, weaving, jacquard, printing, embroidery, knitting, Passementerie and apparel lines , but how to implement the actuators. In the field of mechatronic textiles, two basic techniques are used to produce mechanical modeling motion/motion in textiles.[3,10]

Problems

-The curricula are empty in the faculties of engineering, specializing in textile engineering, from studying these modern types of specializations in many countries of the world, which makes the graduate weak and does not keep pace with the local or international labor market.

-Similarly, the curricula are empty of textile engineering applications in faculties of artificial intelligence.

-Many countries import modern machinery and equipment, sometimes used in the field of textiles, and it does not have the capabilities and elements of maintenance, repair, development and innovation, this puts it at the bottom of the industrialized countries.

-It does not make sure approved brands, whoever owns the technology owns the brands.

Methodology of article[15]

In textiles, systematic reviews[15] strongly encourage applications of mechatronics in textiles, for which all datasets on which the conclusions of the article are based should be available to readers of intelligent systems/applications of mechatronics opportunities in textiles,[15] and which encourage authors to ensure that their data sets there are either opportunities for mechatronics in textiles located in publicly available warehouses and on display in key areas: script yarn, jacquard, printing, embroidery, knitting, lace, embroidered stripes" or additional supporting files whenever possible.[16]

To discuss and compare design ideas early in the textile design process in textile building machinery, we need ways to model textile machinery such ideas long before the system is operational in machinery. With mechatronic systems in the textile industries, this is particularly difficult, because one idea will typically include considerations of both mechanical and electronic subsystems and software. We will use the term design concept for such a basic solution. This paper deals with methods for creating and describing mechatronic design concepts in textiles, and discussion will be limited to the functional interaction of mechanics, electronics, and software because of the methods needed for the spatial arrangement of subsystems of mechatronic opportunities in textiles such as applications such as spinning, jacquard, printing habit, embroidery, knitting, lace, lines Passementerie, of its various types.

Mechatronic in textiles "Jacquard Weaving"[3]

Figure 1 Stäubli[17] A passion for innovation, retrieved at https://www.staubli.com/en-gb/profile/company/.

Figure 1 Stäubli[17] A passion for innovation, retrieved at https://www.staubli.com/en-gb/profile/company/.

Stäubli[17] is a textile machines were building of mechatronics solutions provider with three core activities: conductors, robotics and machines of textiles.[3] It is an international group which currently operates in 29 countries, with agents in 50 countries on four continents. Our global workforce of 5,500 people share a commitment to partner with clients in nearly every machines industry to deliver comprehensive solutions with long-term support. Originally a science of 1892 as a small workshop in Horgen/Zurich, today the Stäubli is an international group headquartered in Pfäffikon, Switzerland,[2] providing textiles innovative solutions to all industrial sectors worldwide.[11,17,18] Stäubli is a mechatronics solutions provider with three divisions: textile machinery, connectors and Mechanical modeling of textiles robotics (Figure 2).[4,3,17]

Figure 2 New: LX electronic Jacquard Photo: Stäubli.

With a workforce of over 4000, the company generates annual sales in excess of 1 billion Swiss francs. Founded in 1892, Stäubli is today an international group whose head office is located in Pfäffikon, Switzerland. Stäubli Textile has been developing and producing high quality systems for the textile industry for more than a century. The company holds a strong market position in textile machinery, a position it has earned through the constant pursuit of customer satisfaction.[4,17] With its Deimo knitting solutions and Deimo drive systems, Stäubli showcases its latest developments on its two sock knitters. Also of note are a variety of servo motors, electronic control solutions, input/output devices, and programming tools primarily related to the textile industry.[4] TMA 2015 – Stäubli: All around mechatronics solutions. Stäubli is a textiles machines of mechatronics solutions provider with three divisions: textile machinery, textiles connectors, and textiles robotics (Figure 3 & 4).[4,17]

Through continuous research and development activities, Stäubli offers machines which fully meet the evolving market demands and associated customer requirements. Stäubli[4] frame weaving solutions

are known for their reliable, high-speed weaving and adaptability to any type of plain or structures of fabrics and any type of weaving , Jacquard , Printing , Embroidery , Knitting, Lace & Passementerie Stripes machine. Textiles Robustness and The durability and high quality have made the wide range of 1600/1700 series cam motions and the S3000/S3200 series electronic rotors well known as highly reliable working units with a very long service life. These machines make up a perfect system with custom of textiles maintenance-free Stäubli transmissions, built to the highest quality standards.[4,17]

Figure 3 New: LX electronic Jacquard Photo: Stäubli.

Figure 4 LXM electronic Jacquard machine – Available in formats up to 5,376 hooks.[17]

Stäubli solutions which can boost weaving, sock-knitting performance and overall mill efficiency (Figure 5)

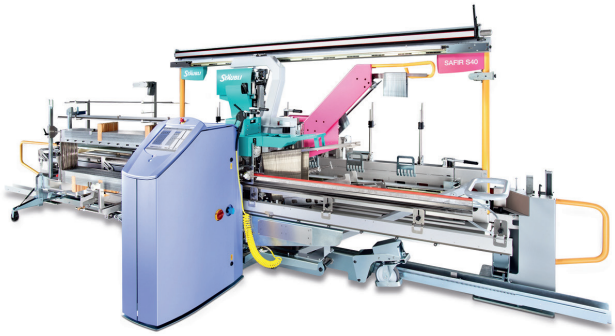

Figure 5 SAFIR S40 automatic drawing-in machine – featuring active warp control technology for yarn sorting.

Stäubli offers its wide range of machines equipped with the latest technology and advanced software solutions which offer new and expanded benefits to textile mills.[4,17]

Jacquard weaving – Stäubli covers the spectrum[19]

From high-volume textiles machines (up to 25,600 hooks)[19] to selvedge Jacquard machines, weavers can choose from a wide range of Stäubli solutions for Jacquard e-textiles. It is available in two forms (2,688 and 5,376 hooks) and thus meets the requirements of a wide range of applications and ensures reliable operation at high weave speeds. Stäubli's compelling answer to the growing need to protect premium proprietary fabrics with branded edges is Jacquard's N4L machine (Figure 6).[4,17]

Figure 6 N4L name selvedge Jacquard machine – Available in formats of 80 and 128 hooks.[17]

Mechatronic in textiles "knitting structures"[19]

The optimal course of the machines weaving process depends on many different prerequisites also resulting from upstream processes, including filament processing and warp preparation.[19] With the SAFIR series of drag systems, the Stäubli offers unique advantages, such as a high-quality torsion setup with perfectly aligned threads. The secret is AWC (Active Warp Control), Stäubli's exclusive yarn sorting technology, which handles both single and multiple yarn types (Figure 7).[4,17]

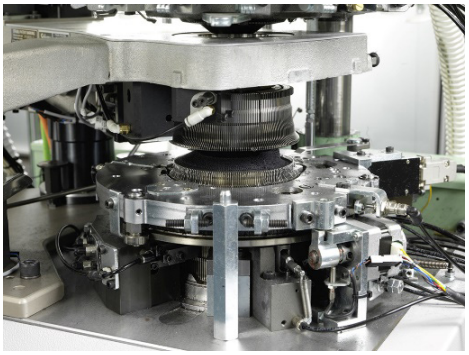

Figure 7 Sock knitting – D4S toe-closing device increases productivity.

Knitting Sock manufacturers face tough challenges. They must be able to adapt quickly to knitting market demands and meet tight delivery schedules. In sock knitting, closing the toe is the critical step. It takes time and helps determine quality. This is where the D4S toe closure device comes into play. They are clipped directly to the circular knitting machine, locking one sock while the machine is already knitting the next. Visitors to the Stäubli booth will see the impressive efficiency of this Knitting machine in action.[4]

Mechatronic in textiles "Printing Fabrics" (Figure 8)[14]

The Epson F7200 delivers impressive print results while keeping the process remarkably simple.[14] With a great entry-level price and 64-inch print width, the F7200 is the perfect choice for those looking to get started with dye sublimation fabric printing.[14] The textile printing machines we will focus on are dye sublimation printers, direct-to-fabric printers, and hybrid printers. In the end, your printing application will determine the type of cloth printing machine you need. If you're printing on materials like cotton, silk, or nylon, a

direct-to-fabric printing machine will provide the exact chemistry you need. For polyester materials, you will need a dye sublimation printer (Figure 9).[1]

Figure 8 Epson Sure Color F7200.

Figure 9 Digital textile printing machine market size | Industry Overview, by 2025 allied market research.com.[1]

Mechatronic in textiles "Lace &Passementerie stripes machine"[8]

Border lace making machine Sold By - Vishwakarma Industries, Ahmedabad, Gujarat (Figure 10).[15,18]

Figure 10 Border lace making machine.

We wish to introduce ourselves as a leading manufacturer of machinery required for narrow fabrics elastic as well as rigid tape. The machines include High-Speed Needle Loom, Warping machine, Creel for warping machine, Tape finishing machine, measuring winding machine, Aluminum Beam etc.[15] For introduce ourselves as a leading manufacturer[20] of Lace & Passementerie Stripes machines required for elastic narrow fabrics as well as rigid tape. The machines include high speed needle loom, warping machine, creel for warping machine, tape finishing machine, gauge winding machine, aluminum beam etc (Figure 11–13).[15]

Figure 11 Passementerie, silver, blue, brown, wide crepine or woven border, Munich, Bavaria, Germany.[6]

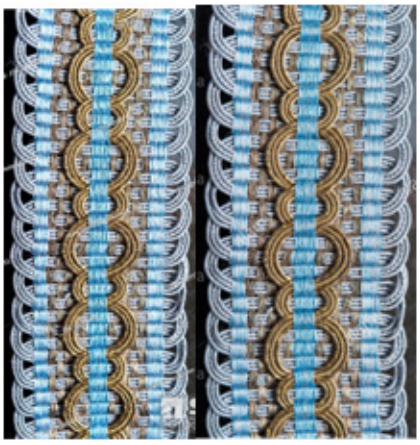

Figure 12 Stock Photo - Passementerie, silver, blue, brown, wide crepine or woven border, Munich, Bavaria, Germany.[6]

Figure 13 Elastic crepe bandage needle loom machine.

Vishwakarma for Lace & Passementerie Stripes Industries, a leading exporter from Ahmedabad, India, offers high speed automatic needle looms for manufacturing a wide range of tapes and products related to Lace & Passementerie Stripes for tight weaving industry. Fully automatic high speed loom machines are specially designed to produce products such as elastic tapes, solid tapes, cotton tapes, cotton belts, shoelaces, nylon tapes, P. plastic tapes, curtain tapes, newer, tapes, satin fabrics, zipper tapes, and polyester, etc.,[18]

Mechatronic in textiles "Embroidery on Fabrics"[7]

Machine embroidery of clothing, fabrics and leathers allows you to add long-lasting logos, slogans, and custom designs to your clothing or accessories.[7] This is ideal if you want to create professional work uniforms for your employees or quality kits for your sports team. But what is machine embroidery, how does it work, and what are the benefits of choosing this method over some others? We will answer all questions you may have about the process here. Read on to find out more.

Digitizing artwork for embroidery (Figure 14)

Figure 14 Automatic six head computer embroidery machine.[19]

Mechatronics of types of applications computerized embroidery digitization[7] is the process of converting an existing piece of art, such as a company logo, into a stitch file which an embroidery machine can then read and use to replicate the design on clothing. We are experts in digitizing embroidery artwork, and we offer this service to anyone looking to embroider their clothing or accessories, computer generated embroidery machine. Pre-made Mechatronics patterns are calculated in a computer program which controls sewing on an embroidery mechatronics machine.[9] All textile designs are uniform in their mechatronic stitches and every project looks exactly the same. There is no contrast to the passion for art form sewing in mechatronics. The design will be mechatronics stitched exactly as computer style dictates. The threads for machine embroidery cannot be divided as a mechatronics hand needle artist can do as a hand projects. The threads are usually made of rayon, polyester or metallic threads and are used to give a synthetic appearance. Rarely can a design be given a more dimensional look and this is due to the type of stitches which have to be done with a mechatronic embroidery machine. Finally, the "mechatronic embroidery machine" for the most part has very little "collective value" due to the fact which it is mass-produced (Figure 15).[19]

Figure 15 Machine embroidery mass produced.[19]

Conclusion

The sustainable industries:[5] brand technology of textiles.

The sustainable textiles industries

In Textile Brand Technology[5] "Construction machinery companies should take more responsibility and accountability for their impact on the development of society." it effectively summed up the current reality of the industry in a recent interview with World Development "WWD". The problem of increased production lies at the heart of fashion and increases the effects of production on the planet and people.[5] Brands produce collections after collections that people are not interested in buying. According to a leading research organization in the field of brand creation, global textile production has more than doubled in the past 10 years. In addition,[5] a harsh comparison with these statistics is the open secret that luxury homes and major brands routinely burn millions of euros of unsold stock. Resource utilization with regard to the general use of primary raw materials in the supply chain for consumption in the EU, clothing,[21] footwear and home textiles represent the fourth highest stress category after food, housing and transport (Figure 1). These textiles are also the fourth highest category for water use pressure.[11]

Definition of brands[11]

A trademark is an identification symbol, sign, logo, name, word, and/or sentence that companies use to distinguish their products from other products.[11] A combination of one or more of these elements can be used to create a brand identity. The legal protection given to a brand name is called a trademark. Companies become closely associated with their brand, if not synonymous with their brand. The higher the brand value, the more valuable the brand is said to be. The brand that brings art and science together to differentiate your brand and build a strong customer experience.[10,11]

a. **Brand insights:**[4] Which marry analytical and creative processes to convert data which reveal important customer and market opportunities.

b. Brand strategy: Which develop strategies which differentiate and elevate your brand with specific missions, visions and values.

c. Brand experience: Which increase brand value and reinforce loyalty through experiential assets and fusing together communication and design principles.

Building a brand of mechatronic

Building and growing your brand is part of mechatronics.[4] That immerse ourselves in the physical and soft data of your world, and then use what we learn to create, express, and grow your presence and influence.[4] Brand extract offers 360-degree strategic brand management. Start with comprehensive research, data analysis, customer insights, and company brand touch points. Charting a course of action through smart communication plans and programs. Build essential brand assets and help you incorporate new behaviors and approaches that spread your message and enhance customer advocacy. Providing you with the tools and technology to monitor and adjust performance quickly and easily. As a result, it may not be immediately obvious what steps you should take.[4]

a. Designate a project lead

b. Involve your managers and subject matter experts

c. Ask the right questions

d. Frame the information.

Creating a brand of mechatronic[11]

When a company decides to settle on a brand to be its public image, it must first determine who its brand is, or how it wants to present it.[11] For example, a company's logo often includes the message, slogan, or product that the company is offering. The goal is to make the brand memorable and attractive to the consumer. The company usually consults a design firm or design team to come up with ideas for the visual aspects of a brand, such as a logo or icon. Related terms "Logo" A logo is a graphic mark, emblem, symbol or stylized name used to identify a company, organization, product or brand. Understanding Product Differentiation: Product differentiation is the process of identifying and communicating the unique qualities of a brand compared to its competitors. Building a strong brand to grow your business: "Brand identity is the visual elements of a brand, such as color, design, and logo that define and differentiate the brand in the minds of consumers". [11]

Definition of brand mechatronic technology[13]

Mechatronic technology companies that embrace their brand as an expression of the promise they make through their people, products and services will increase their market value and position themselves for long-term success.[13] The definition of "mechatronic technology" is evolving, with significant brand implications. Not so long ago, the industry was defined by hardware and software - IBM, Microsoft, and everything in between. Today, the old tariffs just don't cut it. Is IBM a tech or professional services brand,[13] a technology company or media company, an online giant Amazon or an online retailer, while we prefer an expanded (and porous) definition of technology amid a changing frontier industry, we'll focus our discussion in this sector Companies that generate the bulk of their business directly by selling technology products and services.[11]

Budget of TOYOTA textile machinery, INC[6]

Mechatronic Weaving Machines "MWM": The Toyota Group traces its roots back to the famous Japanese inventor Sakishi Toyoda and his invention of the automatic mechatronic loom. Since its inception, Toyota Industries' Textile Mechatronic Machinery Corporation has developed, manufactured and marketed textile machinery, most of which have been supplied to customers outside of Japan. They manufacture two major classes of mechatronic textile machinery:[6] mechatronic spinning machines and mechatronic textile machinery. Mechatronic textile machines are praised by customers all over the world for their reliability and high productivity as the products have been developed with technological experience accumulated over the years. Especially since our pioneering jet loom ranks first in the industry (Figure 16 & 17).[6,11]

Figure 16 RX300 (High-Speed Ring Spinning Frame) https://www.toyotatextilemachinery.com/rx300/.

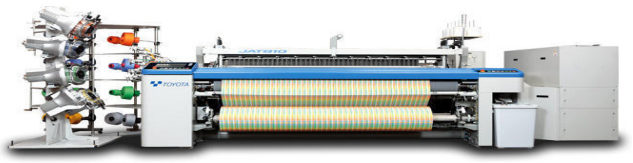

Figure 17 JAT810 (Air Jet Loom).[21]

Mechatronic textile machinery: The mechatronic textile machinery market has been stagnant in Asia, including China, Toyota Industries' primary market. Textile machinery and mechatronics segment net sales totaled 61.7 billion yen, down 14.6 billion yen, or 19%, mainly due to lower sales of textile machinery and yarn quality measuring tools. Operating profit was 2.9 billion yen, down 4.4 billion yen, or 60% from the previous fiscal year. The reason for the decrease in the impact of COVID-19.[11]

Budget of stäubli

Mechatronic textile machinery, 1892 in Horgen, Switzerland, 1.3 billion Swiss francs (CHF) turnover, 2,100 patents granted or pending, 600 R&D specialists and application engineers.[11,12]

Budget of Sulzer weaving[17]

Mechatronic technical textile machines are often similar to those already in use in other fields. However, in many cases it has to be modified, for example to handle different types of materials. In the future,[17] mechatronic technical textiles will be used in more and more fields of application. Today, the global market for technical textiles is $150 billion and is growing rapidly - an excellent opportunity for the mechatronic textile machinery industry in Switzerland (Figure 18).[11,12,17]

a. **Benefits of textiles mechatronic approach:** Brand Extract partners with Mechatronic Producers and Investors™ to develop and implement a customer-focused Mechatronic strategy for small and medium-sized companies. Our science-based framework and benchmarks Producers and Investors enable you to coalesce the needs of key stakeholders using four main principles.[11]

b. **No guesswork:** We use a validated framework to accurately predict the financial performance effects of each Mechatronic strategic initiative. By stating specific financial consequences, we remove the guesswork which normally plagues Mechatronic strategy and execution.

c. **Focus on a few:** We use predictive analytics to help identify Mechatronic strategic initiatives which have the largest financial impact. As a result, we are able to advise companies to achieve more by actually doing less.

d. **Align stakeholders:** Our benchmark Mechatronic approach helps increase alignment around the stakeholders by cascading the strategy and execution process, and chain linking the objectives of the shareholders/board Mechatronic members, senior leadership team and the managers/employees.

e. **Increase accountability:** After we discover Mechatronic strategic areas which maximize financial performance, we can identify small sets of customer, operational and financial. This ensures which managers can hold themselves accountable to achieve the focused goal of Mechatronic strategy and execution.

Figure 18 So we can visit the websites for many companies to see Budget of Qmatex, Textile Machinery, Budget of Lakshmi Mills Group, Textile Machinery, Budget of Smit, Textile Machinery, And Budget of Picanol, Textile Machinery.[11]

Strategy setting up mega textiles park[10,11]

The Egyptian Ministry of Industry and the Textile Holding Company should establish a process to create an ecological model[10] that will allow the creation of new mega textile complexes exclusively for technical textiles and include the existing ones (in the new communities:[10] Sinai - New Valley - Toshka) - Siwa - Aswan - Matrouh, Wadi El-Natrun, El Alamein and many new cities in Egypt. Functional textile gardens will be supported by the government. The characteristics of this textile complex could necessitate a comprehensive "technology-driven" ecosystem with research and development,[10] start-up incubation, forward links with logistics complexes and market access systems and backlinks with the establishment of textile standards under which under the auspices of the Prime Minister. Minister (SPM). Establishment of job quality certification systems through specialized professional unions and chambers of commerce (SPCC), alignment with international testing standards for plug-and-play infrastructure for product realization and machinery production, are some of the additional features of the textile park.[10]

Requirements for strategy setting up a mega textile park:[10,11]

- High investments amounting to 350 million US dollars to develop the establishment of Textile Technology Centers (ETTC).
- An area of about 100,000 acres (20,000 industrial, production and research facilities) (80,000 textile fiber cultivation).
- Interdependence on other auxiliary industries for raw materials and accessories, including sustainable small industries.
- State-of-the-art joint facilities to promote textile science and innovation.
- Conveniences for testing textiles, apparel products, packaging and quality assurance.
- Infrastructure of inventions and production of textile machines.
- Exemptions from duties on imported capital textiles equipment.
- Uninterruptible energy (electricity and solar energy that supports tissue research to establish), water (and desalination ... promising to manage),

Shared services particularly those related to textile technology, testing and packaging, machinery production and research among others, can be operated on the basis of purchasing power parity (PPP) Purchasing power parity (PPP)[10] allows economists to compare economic productivity and standards of living between countries. Situation by competitive selection of specialized service providers, at the same time for several manufacturers located nearby. For example, the primary sampling unit, in sampling (statistics), a PSU such as the Central Agency for Mobilization and Statistics in Egypt may be invited to build their own warehouse at their expense.[10]

The proposed textile complex should have technological and scientific infrastructure in power plant, dump yard, rainwater harvesting, recycling, solar energy infrastructure, textile training center, testing center and laboratories. In addition, social infrastructure such as dining halls, conference centers, restaurants, banks, petrol pumps, first aid and a fire station should be included. In order to encourage the spirit of innovation in textiles and create a new generation of young textile innovators, change the curricula specialized in mechanical industries (fiber-producing, spinning, weaving, weaving, printing and dyeing, clothing and accessories) in the various stages of education. . In line with modern technology, adopting technology and providing opportunities), the government should devise a plan to provide various tax and non-financial incentives for the development and

promotion of incubation centers, provision of seed money for start-ups, and expansion of financing and other forms of support. Required by startup units.[10,11]

Finally International brands needs technology use[10,11]

- Sustaining leadership and management during (R&D).
- Sustainability of training and education during (R&D).
- Sustainability of raw materials through (R&D).
- Sustainability of production through design and innovation for technology and maintenance. During (R&D).
- Sustainability of production through design and innovation of product consumption (fabrics - clothes - accessories). During (R&D).
- Sustainable development for marketing and promotion (with multiple languages and use of technology). During (R&D).
- Sustainability of after-sales services during (R&D).

Conflicts of interest

The author declares there are no conflicts of interest.

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20. Stock Photo - Passementerie, silver, blue, brown, wide crepine or woven border, Munich, Bavaria, Germany. 2021.
21. Toyota Textile machinery. Air-jet weaving machine JAT810. 2021.