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TOPIC 6.1. TECHNOLOGY TRANSFER IN THE TEXTILE AND CLOTHING INDUSTRY

The course is developed under Erasmus+ Program Key Action 2:
Cooperation for innovation and the exchange of good practices Knowledge Alliance

ICT IN TEXTILE AND CLOTHING HIGHER EDUCATION AND BUSINESS

Project Nr. 612248-EPP-1-2019-1-BG-EPPKA2-KA

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AGENDA

- **Technology Transfer**
- **High-Tech Products**

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Learning goals and objectives

In this topic the staff-trainees will acquire general knowledge about the technology transfer process in the textile and clothing industry. The stages of the technology transfer process and the most considered objects in the TCI are presented. The staff trainees will learn about the characteristics of the high-tech products in the apparel industry.

Short summary of content

Technology transfer definition. Technology transfer in the TCI. Technology transfer process. High-tech products in the apparel industry. Characteristics of high technology products.

Expected results

The expected results will be that staff trainees will understand the importance of the technology transfer process in the TCI entrepreneurship and the role of the high-tech products and innovations for the development and the competitiveness of the apparel industry.

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Technology transfer in the TCI

Technology transfer - a process between two social entities in which the technological knowledge is acquired, developed, used and improved by means of the transference of technology components, with the purpose of implementing a process, an element of a product, a product itself or a methodology.
The transferor must be willing to transfer the technology.
The transferee must be able to absorb, adapt and improve the transferred technology.

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Technology transfer in the TCI

Innovative Capacity	Transfer Mode	Transfer Classification	Remarks
High innovative capacity industries	Research to Development to Design to Production	Capacity Transfer	Very high investment in R&D, Vertical transfer of technology, Adoption of new technologies through consultancy and expert services
Medium innovative capacity industries	Production to Design to Development to Research	Capacity Transfer / Design Transfer	High investment in R&D, Emphasize in new product design and development from same technology source, Adapt new processes through employee training
Low innovative capacity industries	Production to Design	Design Transfer / Material Transfer	No or low investment in R&D, Horizontal transfer of technology, Adept new processes by practicing new things

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Technology transfer process

Identifying user's technology need
Update on global technology innovations / technology assessment
Generate / develop idea or strategy
Interpreting the idea/ strategy to the senior staff
Validation and optimization of idea/ strategy

Initiate transfer process
Consciousness / knowledge building on the transfer process
Communicating the manuals / SOP / handbooks of the technology to the user
Training of the executives

Implementation of the transferred technology
Facilitate the complete transfer process
Ensure satisfying the user's need / solution of problem and reporting

Ideation stage

Transfer stage

Facilitation stage

Source: https://textilefocus.com/technology-transfer-mechanism-textile-industry-part/

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Most considered TT objects in the TCI

CAD	Computer aided design	Any design activity that involves the effective use of computers for drawing and designing parts or products for analysis and testing of designed parts and products
AIN	Automated inspection	Parts presentation and inspection are both performed automatically
AMHD	Automated material handling devices	Systems capable of automatically loading, unloading, or sorting unit loads; parts feeding and delivery devices
NC	Numerical control	A form of programmable automation in which machine tools the processing equipment is controlled by means of numbers, letters, or other symbols
SPC	Statistical process control	Mathematical techniques used to control control manufacturing processes within specified limits to ensure that the process is conforming to the desired standards
PPIC	Production planning/ inventory management software	A computerized production planning system whose function is master production scheduling, material requirements planning and capacity planning
LAN	Local area networks	Communication system that permits various devices connected to the network to communicate with each other over distance of several feet to several miles

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Most considered TT objects in the TCI

PPR	**Pick/place robots**	**A simple robot with 1-30 of freedom, which transfer items from place to place**
OR	Other robots	A reprogrammable, multifunctional manipulator designed for automation assembly line for garment making, move materials, parts, tools, or specialized devices
HSSM	High speed sewing machines	Sewing machines run on high speed with fully/semi automated operation, digital panel and control systems
MFPM	Modern fusing and pressing machine	Fusing machines used to fuse the materials which runs on controlled temperature and speed adjustments and the steam pressing machines with air suction systems
CUFF	Computers used on factory floor	Computers used solely for data acquisition or monitoring daily data, but which are capable of being reprogrammed for other functions

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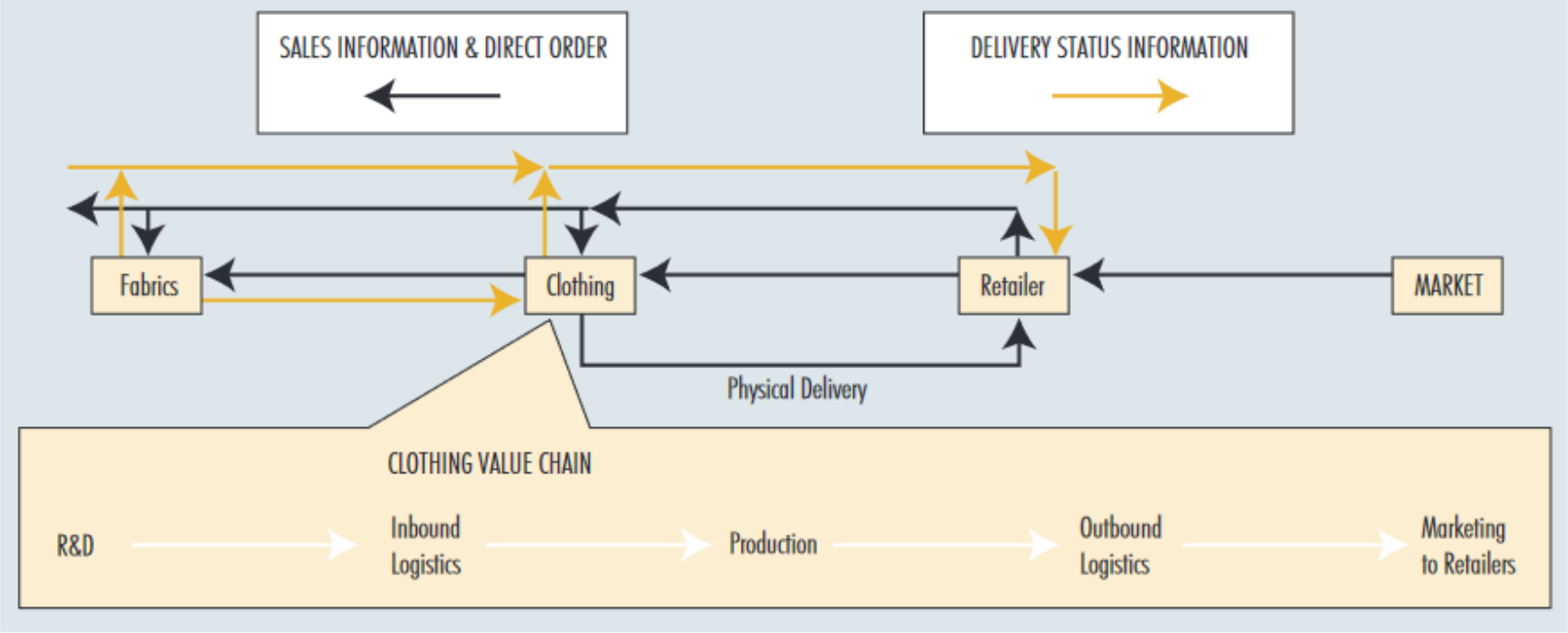
Assignment 1

Look at the role of ICT in the textile and garments value chain - The Global Textile and Garments Industry. Discuss on benefits and risks for taking TT.



Source: Adapted from a slide by Matthias Knappe of the International Trade Centre UNCTAD/WTO. The Changing Global T&C Market and the role of "e" Applications to Increase Competitiveness. Sao Paulo, November 2004.

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Steps to technology transfer in the apparel industry

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- **Technology needs assessment -** it provides an opportunity to identify the need for new technology, equipment, knowledge and skills for mitigating greenhouse gas (GHGs) emissions and reducing vulnerability to climate change.
- **Technology transfer pilot projects -** through pilot projects, countries can acquire environmentally sound technologies needed to move toward a low-carbon development. The innovative and diverse technologies piloted in these projects are in the following fields: Renewable energy; Energy Efficiency; Transport; Waste management; Carbon capture and storage; Water management.
- **Dissemination of experience -** provide a better, more in-depth understanding of the technology transfer process.
- **Long-term implementation.**

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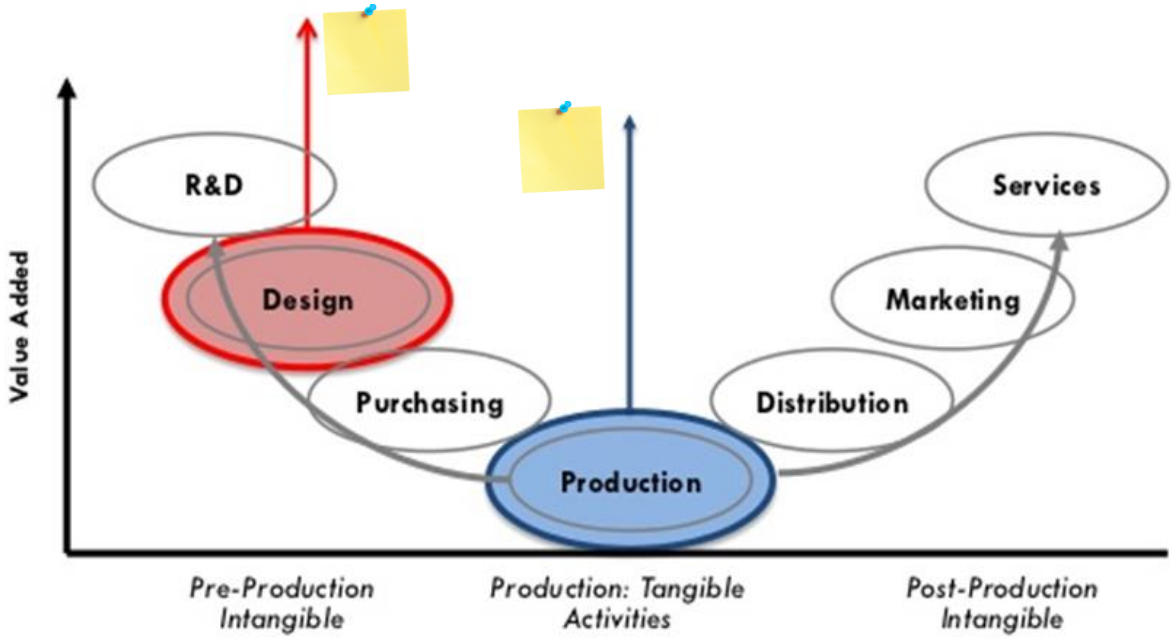
Assignment 2

Look at the given cases - Digitized materials for realistic 3D visualization.
Discuss on the next steps for TT.



Innovation situation 1: Optimized digital material parameters that enable a realistic 3D simulation of properties such as the texture or opacity of clothing fabrics used.

Innovation situation 2: The digitization of material parameters that enables development of accessories such as (elastic) ribbons, zips or buttons.

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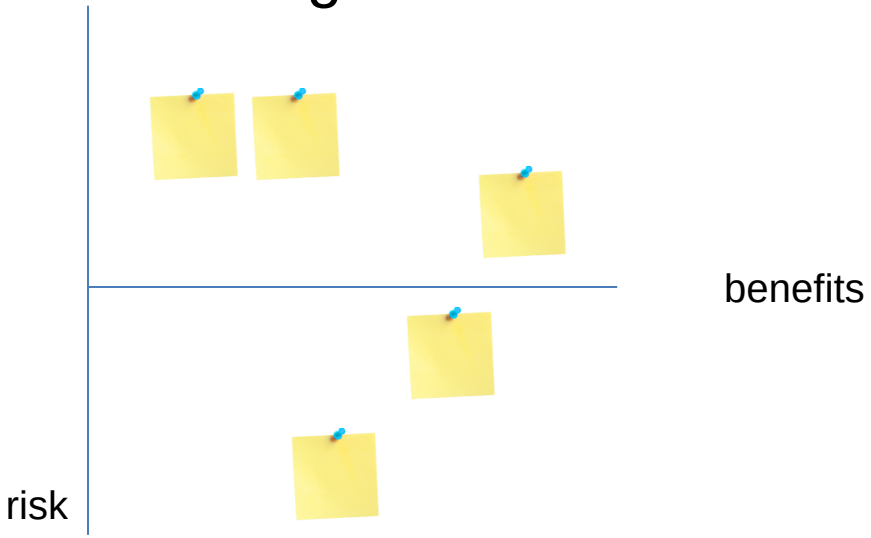
Assignment 3

Look at the next case - [Textiles and Clothing Manufacturing: Vision for 2025](), Page 35. Discuss on benefits and risks for taking TT.



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Resources situation: Building a business with a circular model The vision statement says that the textiles and clothing industry "will operate according to a globalized and efficient circular economic model that maximizes the use of local resources, and develop advanced manufacturing techniques…" After having been a savvy operator in the clothing fashion business for 20 years and having achieved financial success, Bart is getting tired of the fashion rat race. One of his acquaintances has made him aware of the dark side of the glamour world, with its child labour, sweat shops, energy and resources wastage and unsustainable practices. His entrepreneurial spirit still intact, he decides to set up a new company that could help him satisfy his newly found environmental conscience: The Clothes Circle. The objective is simple: being able, in 10 years, to be an established provider of affordable good quality clothes on a fully circular model using 100% renewable raw materials.

Questions: Considering that Bart is starting on the basis of today's circumstances, how can he do it? What is needed to make this possible?

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High technology products

High technology products typically allow the user to have a better experience than was available before, performing a function faster, cheaper, or easier. They may also provide either totally new functions or capabilities that consumers have not experienced before.
The largest part of marketing your product will entail understanding who has the need for this innovation and communicating the benefits it offers.

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Characteristics of high technology products

- Inherent risk - highly innovative products often come with uncertainty about the market, the new technology, and the competition.
- Short life cycle - no matter how innovative an idea may be, there is always usually someone else who finds a way to improve on it. Even high-tech products that continue to be in demand for a long time tend to undergo continuous updates and refinements to keep them at the forefront of technology.
- High research and development (R&D) expenses - can lead to high consumer prices. Because many small businesses lack the capital needed for R&D, they are unable to see their innovative ideas come to fruition.

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Questions for discussion and tasks

- What is technology transfer?
- Give examples for technology transfer in the TCI.
- What are the stages of the technology transfer process?
- What are step steps to technology transfer in the apparel industry?

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