IMPLEMENTING INNOVATION AND BUSINESS PROJECTS: CROSS FERTILIZATION BETWEEN INDUSTRY AND EDUCATION

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Abstract
Competitiveness of the clothing and fashion industry in Europe, which is dominated by small and medium-sized enterprises (the average company is family owned and employs 20 people), should come from innovative performance-enhanced sustainable products and processes as well as from an innovative market approach.
Therefore the clothing and fashion industry must shift from a resource based industry to a knowledge based industry. This requires adapted course curricula and adequate circulation of knowledge across the different layers of organisation (industry, research and education)
The Bachelor of Fashion Technology as a professional needs personal abilities, entrepreneurial competences and technical capabilities to develop coordinated innovation projects on time according to economical, technical and societal needs.
It was a challenging task to offer an environment where more extensive insights in product and process development and in organizing and entrepreneurship can be acquired and where knowledge can circulate between education and industry.

Keywords: CDIO, Innovation, Fashion

Introduction
The European fashion industry is well established in terms of product quality, productivity, innovation and creativity. Despite increasingly fierce global competition and significant relocation of manufacturing to low-wage countries it continuous to be of considerable importance to Europe's industry.
Not strategies that rely on quotas and protectionist legislation will help to pursue this successful industrial activity in the future, but strategic innovation represents the future of the European fashion industry.
Strategic innovation means competing within an existing industry in a fundamentally different way that redefines and enhances customer value. Unlike traditional innovation, this different way of competing does not entail product innovation as such.
Rather, superior value for customers is derived from innovations in organization. Such innovations may relate to the product concept, production, service provision, or the marketing of the respective product or service.
For strategic innovation to occur, activities and capabilities are leveraged in such a way as to offer customer value that breaks with established industry recipes.

Pure technological innovation can be an important enabler but is neither a necessary component, nor the central focus in strategic innovation.[1]
It is unfortunately a general rule that the fashion industry, which operates in a very competitive market, invests very little in strategic innovation.

The European fashion industry, a knowledge based industry

For thousands of years, clothing has consisted only of a number of layers providing warmth and protection beyond our natural skin. Today the fashion industry is challenged to respond to the demands of our modern society obsessed with risks, thrilled by experiences, cocooned by well-being, obliged to achieve sustainability, enslaved to low prices, individualistic and self-indulgent.
The development and the marketing of these customized products is subject to an enforced market orientation, to textile materials with high levels of quality, beauty and performance characteristics, to more flexible small batch oriented manufacturing processes that allow both a better consumer orientation (mass customization) and high levels of quality and performance of the garment and finally to an intense cooperation within the textile/clothing value chain.
This challenge involves major changes in managerial attitude:

- The introduction of the four key elements of strategic innovation [1]:
    - *Value innovation: offering the customer a product or service that he perceives as valuable and new;*
    - *New market creation: stop focussing on the same market segments as their competitors, but instead attract new types of customers. New markets can be created within existing industries by identifying unserved customer segments, targeting new combinations of existing customer segments, or redefining how the market is segmented (Markides, 1997);*
    - *Go-to-market innovation: finding a novel approach for marketing products or services;*
    - *Competitive disruption: deviating from the structure existing in the fashion industry and adopt an entirely new business model.*
- The availability of capital and the will to take risks in developing products and processes for which the market is still in a developing phase.
- The introduction of quick response strategies [2] that speed up the flow of information and merchandise between retailers and manufacturers of apparel and textiles, all driven by the consumer.
- The receptiveness for an adequate circulation of knowledge across the entire supply chain and along the different layers of organisation (industry, research and education) for each link in the supply chain and layer has its own specific expertise and relevance.

Innovation and business projects in Fashion Technology education

In order to comply with the needs of a changing industry, we assert that graduating Bachelors of Fashion Technology must command technical skills, which are ever-increasing, a wide array of personal and interpersonal abilities and entrepreneurial competences so he or she can develop coordinated innovation projects on time fitting the economical, technical and societal needs.

Although product and system lifecycle development and deployment are the connecting thread in the curriculum of fashion technologists, it was a challenging task to offer an environment in which more extensive insights in product and process development and entrepreneurship can be acquired together with personal and interpersonal abilities and in which knowledge can circulate between education and industry.
In order to do so we integrated an interdisciplinary twelve week project based on the CDIO principle in the third year of the curriculum and engaged an industrial firm which was open for external input during different stages of the innovation process. All partners should benefit from the project results.
Giving students the opportunity to learn and work with "professional tools" of entrepreneurship, e.g. concerning product and process development, enhances their understanding of the complexity of the role of entrepreneur and of innovation in the setting of a company.
First all students are provided with an insight into the current status of the existing company.
Then they are divided into five project teams comprising five individuals each. Thus, different views on both the organization of the company and the product or service to be developed are ensured. Each student has a clearly defined responsibility in his or her own group.
In the 'Conceive' stage of their project students must define the product or service they want to develop considering the customer, technology, enterprise strategy and regulations. For this purpose they make use of GPS for enterprises [3]. This is a simple but effective brainstorming method to generate ideas. The group explores how they can react to a number of trends and developments listed on the GPS board. The trends can be chosen from a list comprising 21 trends selected out of major trend reports or they can choose other trends. The session consists of three rounds.

1. Round 1: generating ideas
2. Round 2: selecting ideas
3. Round 3: expanding ideas

To generate ideas the students must think creatively. This means they must try to look at things differently, reserve judgement, try to associate, think up alternatives and try to visualize things along with an idea.
To select the ideas we divide them into three categories:

1. Ordinary ideas that can be implemented (NOW)
2. Original ideas that can be implemented (WOW)
3. Original ideas that cannot (yet) be implemented (HOW)

In the final round the ideas must be expanded. Once convinced of the idea the students must make up a business plan taking into account the six P's (presentation, product, place, price, personnel, promotion), a financial plan and a logistic plan.
In the second stage, 'Design', they focus on the design and make the drawings, patterns and the technical card.
In the 'Implement' stage they must work out a working prototype and present it to the jury.
In the final stage 'Operate', which was no longer part of the project, the participating company selected one product and took it into production.

The importance of good supply chain management

A SWOT analysis of the fashion industry made clear that networking throughout the entire supply chain is a necessary component for a successful product and system

lifecycle development and deployment. To enhance this and to support both the industry and the students the knowledge platform "MoTIV" has been created. MoTIV is a joint research, innovation and educational initiative of the University College of Ghent, the Belgian Apparel Organisation Creamoda, the Belgian Institute for Training and Research in Fashion Technology IVOC, the Belgian Textile Research Centre Centexbel, the Belgian Association of the Textile, Wood and Furniture Industry Fedustria, the Flemish Training Centre SYNTRA WEST, the Belgian Association of Textile Maintenance FBT and Devan Chemicals.
The project aims at a cross fertilization between industry and education.
To achieve this MoTIV has a clearly defined mission:

- enhance the communication within the supply chain of textiles, clothing and retailers in order to promote innovation and shorten up the time to market of new technologies and products;
- support the industry in shifting from commodities to specialty products and developing breakthrough technologies enabling mass customization on a high tech, high speed, flexible and low cost basis;
- monitor economic and technical trends, assess their impact on necessary training and dissemination activities and integrate the results in training programmes
- translate knowledge resulting from research to knowledge applicable in design, marketing and production.

This will result in an enduring industrial competitiveness for the European fashion industry, in education programmes that reflect the changing qualification requirements of the industry, together with an increase in the attractiveness of courses in fashion technology and a career in the clothing and fashion industry.

References

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[2] J. Bae, T. May-Plumlee, Customer focused textile and apparel manufacturing systems: towards an effective e-commerce model, Journal of Textile and Apparel, Technology and Management, vol. 4, issue 4, Summer 2005
[3] www.flandersdc.be

Biography

Diploma:
Graduated in 1988 as Master in Textile Engineering.

Work area:

- Product manager in Belgium's largest textile mill from 1988 till 1994.
- Technical support manager in a chemical company, supplier to the textile industry from 1994 till 1999.
- Started a career at the University College of Ghent in 1999 as a Researcher and innovation expert for the textile industry. Specialized in coatings and technical textiles.
- Since 2005 President of the Study Committee of Fashion Technology.
- Lecturer of Applied Informatics for Clothing and Fashion Industry.
- Since 2008 also Faculty Coordinator for research and services.

Memberships in national and international organizations:

- Founder member and member of the board of MoTIV, Flemish Knowledge and Innovation platform for the Fashion Industry.

- Member of the Euratex Thematic Expert group 'Clothing/Fashion mass customization and new product design concepts & technologies.

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