11th International Conference on Customization and Personalization MCP 2024
The Power of Customization and Personalization in the Digital Age
September 25-26, 2024, Novi Sad, Serbia

Could MCP contribute to the garment business during the transition from linear to circular?

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Abstract: *Feasible study should be conducted whether two different principles could be co-existed during the transition phase of textile industry from linear to circular. The transition, either in gentle or dramatic, we should better conduct Due Diligence with setting up timelines.*
The resource of textiles, natural or manmade, are limited except chemical fibre made from resins derived from crude oil. We know also in these days biomass derived resins and also recycled from finished goods but the share remains tiny portion.
More than half century ago the report titled "The limit of growth" declared that our society could not rely on crude oil forever because of the total known reserves. Since new mining technology has been introduced to blow up such concern well beyond 21st century. But we all know such endless usage of hydrocarbon, coal, oil and gas, could not be realized to prevent boiling up of our mother earth. So decarbonization has come to the common and inevitable agenda including textile business.
Though more than a couple of decades efforts conducted MCP has not contributed much in our society. The transition should be fundamental so we should exec r ise new MCP.

Key Words: ***Circular textiles, due diligence, co-existence***

1. CURRENT CONDITIONS, REQUIREMENTS AND CHALLENGES AHEAD

Every business has its own conditions, requirements and could conduct under them. Sustainability has become the norm of our society since the latter half of former century such as Silent Spring (Rachel Carson, 1962) and The Limits to Growth (Club of Rome, 1972). With some headwinds today, such as the slogan “today’s food is essential than tomorrow’s earth”, though most of us agree with the importance of sustainable society.

MCP has nearly half century history. Before the actual practices, customization and personalization had been provided by bespoke artisan and craftsman for wealthy customers for a long time. As one aspects of democratization of economy, MCP had been discussed as an enabler for the next step. Historically every product, including textile products and garments, have been made to fulfill individual needs.

The industrial revolution saw the mass production of textiles, and the variety of woolen and cotton fabrics were produced and also exported around the world, but garments continued for a while, to be produced through labor-intensive sewing process, mainly by women, with fabric purchased in circulation. Advances in printing technology fashion illustrations were circulated as medium. Royals, aristocrats, and later the emerging bourgeoisie become the fashion trend setters and their trends spread though fashion illustrations. In twenty century fashion designers opened their maisons for their customers and provide bespoke fashion. Fashion journalists and buyers are also invited with their dedicated customers to join fashion preview show by maison. Buyers of large garment stores and department stores produced ready-to-wear clothing with popular designs that reflect the latest trends of high fashion and sell them in their own stores. In this way, fashion trends were quoted and consumed. In mid twenty century in France some haute couture designers shifted their business from bespoke to ready made clothing and they were called as pret-a-porter by designers which were another phenomena of fashion democratization.

Through the period of industrialization products started to be made in advance by bulk and that was the birth of era of ready-made to be stocked on the shelf of merchants. Production controlled by so called the advance planning, not by the actual demand, and factory owners hoped to pursue production to maximize both efficiency and profit. Merchants hoped to stock merchandise synchronized with the actual sales and avoid shortage. The bull-whip effect had been regarded as inevitable phenomena of actual supply chain.

As ICT technology emerged business had poured enormous energy to tackle the bull-whip effect to streamline supply chain burden. During this business practice one of the idea was to communicate one to one to their dedicated customers to grasp real demand and that effort had been regarded as MCP. Unfortunately, their efforts to build up MCP business mostly failed and

Professor Frank Piller, and Professor Fabrizio Salvador examined the failure reasons. We see some number of success cases, but they are not regarded as the main stream, so in some industry and country MCP has been regarded as unfulfilled dream or invalid attempts.

This paper discusses the current status from both supply and consumer sides. This discussion is based on the authors' former projects in the sectors and in white papers and other publicly available documents of international organizations and institutions such as OECD and EU. The paper intends to provide elements of reflections around whether and how MCP could contribute to the future appare business during the transition from linear to recycler and circular.

2. BUSINESS ENVIRONMENT OF GARMENT BUSINESS WITH RENEWED REQUIREMENTS

Among consumer business the garment business has been pointed out such as, scarcity of material resource and water, volume of energy consumption, and the business model based on the sacrifice of the socially vulnerable. OECD developed Due Diligence Guidance for Responsible Supply Chains in the Garment & Footwear Sector in 2017, as one of the industries with huge challenges.

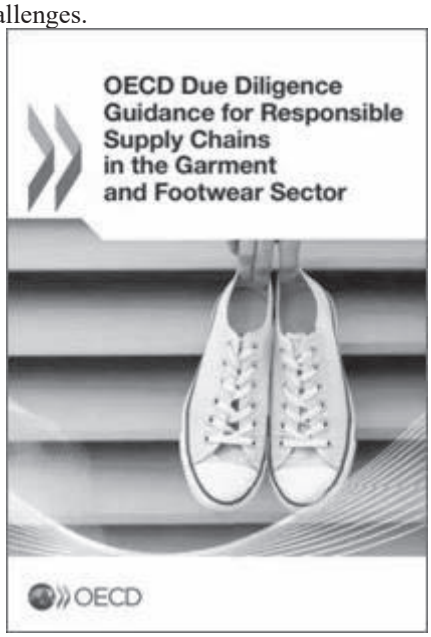


Fig. 1. *OECD Guidance cover page*

EU Commission published Proposal for a regulation establishing a framework for setting ecodesign requirements for sustainable products (ESPR), COM(2022)142 in March 2022, to tackle the problems of consumer goods. The essential of the proposal based on the business model shift from current linear economy, resource disposed economy, to circular one under Green Deal. Directorate-General for Environment, EU Commission also proposed EU strategy for sustainable and circular textiles in March 2022.

One of the panelists of OECD Garment Forum of 2024 declared the textile business has already become regulated. Among the discussed measures contains the intervention of corporate behavior such as ban of unsold goods. These measures are aimed to promote the transition of textile industry to circular model, such as adopting easy-recyclable product design and abandoning the efficiency of production volume. Garment production, sewing, has been the typical case of labour intensive and production number matters the factory's efficiency. Sewing proficiency is positively correlated with the lot size since the color and model of the sewn product changes, the sewing thread also needs to be changed, which reduces the time efficiency. Fast fashion brands emerged in this century to provide models every week, for example every Thursday new products put on display on the shopfloor or webpage for the high demands of weekend and that means fifty two product cycle a year. That is the reason of the system called Fast fashion, as the traditional brands provided only four times a year, in every season. Big brands could utilize the volume order with smart management skills to handle multiple design models. Recently cross border e-commerce brands with fashionable screens and sophisticated presentation methods that stimulate consumer purchasing desire emerged. They are called Ultra-Fast fashion brands and the typical two companies in China are shipping nine thousand tons of air freight to the world every day. These Ultra-Fast fashion brands, with ultralow prices and on-trend styles, mostly ship directly from the factories to consumers utilizing de minimis threshold of tariffs, EU's €150, and the US's $800. Fast fashion brands also produce in overseas but their products are traded in bulk so they could not enjoy de minimis of tariffs, another price disadvantage for them. Garment retail competition has drastically changed after the pandemic with Ultra-Fast fashion brands, Shein and Temu. Garment business conversation in 2024 has resulted how to cope with invisible competitors even among Fast fashion brands.

EU Commission President von der Leyen declared fast fashion is out of fashion in July 2021. In Aprel 2023 European parliament issued the press release titled "Ending fast fashion: tougher rules to fight excessive production and consumption" and stressed that people and the planet are more important than the textile industry's profits.

Decarbonization has been regarded as essential among modern society including consumers. Gen Z are keen to focus on sustainability among them. Having experienced the extreme weather of recent years globally, ordinary consumers and our whole society are increasingly aware that behavioral change is necessary and essential, including in consumption. Awareness of the UN's SDGs is also on the rise. However, the main buyers of Ultra-Fast fashion are Gen Z, and there is a gap between awareness and action. The transition to a circular economy requires understanding not only from the industry side but also from consumers, but unless a concrete vision is presented, it will not lead to actual behavioral change. In particular, the constraints of the transition will be difficult to accept without a shift in values, so there are many challenges ahead, both in business and consumer.

Twenty member of EU Parliament hosted the open forum titled Beyond Growth 2023 Conference in May 2023 and its follow up event A Blueprint for a Social and Green Deal was held in December 2023. The organisers hoped to discuss the shortcomings of the social

dimension of the European Green Deal, which is the main policy measure of current EU.

In the diffenrent direction during a European Industry Summit held in February 2024 Antwarp Declaration focused on revitalize industry competitiveness was published with the sign of seventy three industry leaders and Commission President, Ursula von der Leyen attended the both event.

Fig.2. *Beyond Growth 2023 Conference*
Source: webpage from degrowth.info

Fig. 3. *Antwerp Declaration*
Source: webpage from CEFIC

3. Coexistence between linear and circular models of garment business

As previously mentioned, we have observed the reason of MCP projects failure. We have observed the same difficulties of coexistence between linear and circular models of garment business. The latter model has been sought after as the essential one but not so much success we see today. One reason is that new project should need some human and financial resource so it's common that under the umbrella of big organization which could afford or establish in-house or as a new subsidiary. But we face the difficulties of coexistence of units based on different policy under one roof and should think that should be lack of business sustainability. The difference between linear and circular models should be completely opposite in operational value since it is extremely difficult to align such as accounting standards and employee evaluation criteria,

This might be one insightful Japanese sample case though not the perfect one neither in the same industry. Bridgestone is one of the global tire makers and also provide re-tread tire for users. "Re-tred" refers to the process of wrapping rubber around core of tires whose tread has worn down during driving, re-cutting the tread and making them safe to use as new ones. These process need specific materials and technologies and Bridgestone all conduct by themselves.

Their main customers of new tires are car makers to install them in their new cars and the second piler is wholesale to retail outlets, tire shops. The main customers of re-tread tires are freight transport companies and bus/taxi operators, these re-furbish business system has been different from wholesale. When Bridgestone decided to expand re-tread business the company handed their customers' contact points to existing retailers. The company supported retailers' capacity building and transformation, from tire sales depot to service provider as overall management of tire users. With this scheme the company could avoid not only cannibalization but also building firm relationships with existing businesses partners. The success point of this case is Bridgestone's decision to realize optimizations for all involved parties by looking at the whole value chain from a company-centric perspective.

The sample case carries out re-furbish with new production but it's not a full circular model since the company does not conduct material recovery of tires of end of life. It still remains hard task for tire manufacturer, because of technology and commercial efficiency. The most common materials used for tires is styrene butadiene rubber (SBR) but during molding process vulcanization, or crosslinking, reaction occurs, so chemically, the raw materials such as polymer, carbon black, vulcanizing agent react and turn into different chemical substances. This reaction is not irreversible but not easy to get SBR from tires.

The lesson we could learn from this sample for garment MCP should be a clue as to how to deal with the challenge of co-existence of two business models. It is noteworthy that by carefully examining existing value chain assets, including real users of the products beyond their retail channels, the company was able to select overall optimization rather than self-centric aproach. Re-furvishing has been reommended in consumer goods business under ESPR. The company assisted their retail outlets to transform and add capabilities to solve the problems of real tire users. The company has changed product specifications and engineered to have a structure that allows them to be re-treaded several times over the course of use, thereby increasing synergy between its two business units.

Fig. 4. *Waste hierarchy from EU Waste Directive*

When applying above case to garment business, the starting point for brands is to review product specifications and use materials and designs that are suited for recovery, one step above the bottom in the waste hierarchy. It is essential to establish a function to inspect and evaluate products collected. In principle,

brand companies should have all the information on specifications of their own products, and it is considered desirable to conduct this process to manage in-house. In case outsourcing to exsiting collector and sorter companies, it is essential to provide all the needed product information.

In France, the early adoptor of EPR since 2008, there is an option to collect and sort in-house instead of paying a levy based on the number of items sold per year, but not a single company has chose this for years. In addition, returned products from customers, especially in e-commerce. after confirmed whether they were sold by the company or not, they tend to discard them without sorting. At present, brand companies are not particularly proactive in their efforts toward post-sale process needed in circular economy.

It is known that there is a gap between the perspectives of consumers and professionals regarding reusable and resallable products, so checking the quality of the collected products should be essential and that process might be better conducted by the brands themselves.

4. MCP, THE NEXT PRACTICE IN CIRCULAR ECONOMY

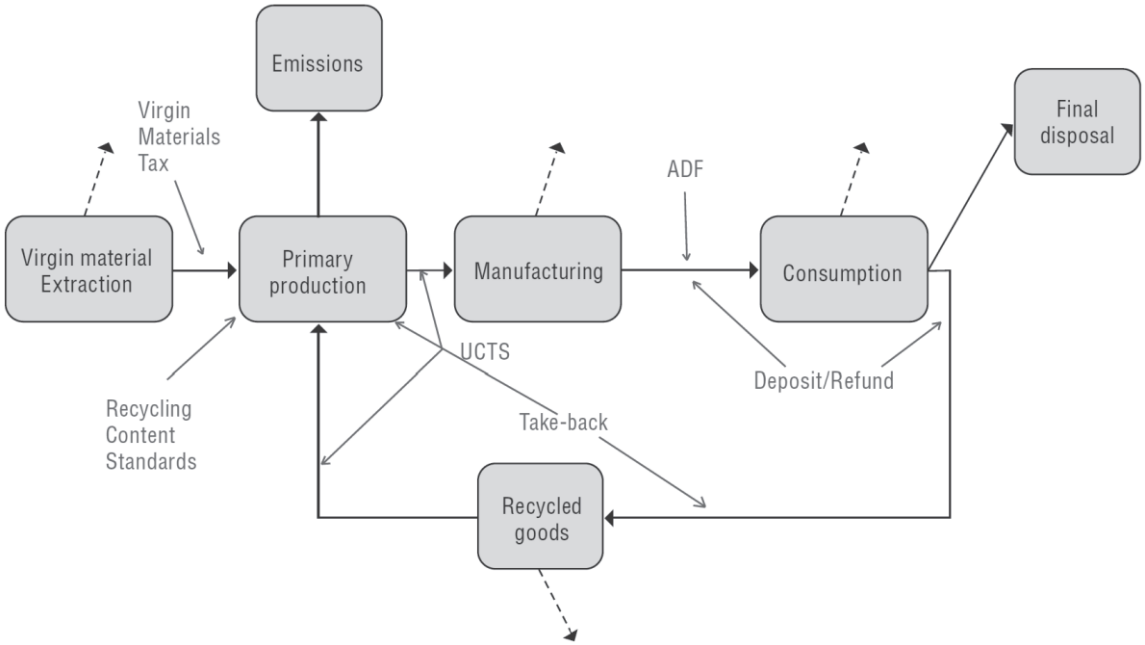
Under circular business model the rights and obligations of business organizations should be different from that of current linear model. OECD proposed in 2016 to promote EPR for garment business and recommended multiple policy measures under circular eonomy.

business obligations and incorporatin business externalities in the blog post and saw ADF might be the most easiest one to implement among current garment business.

From the conventional wisdom of "maximizing profits by pursuing customer satisfaction" to "minimizing environmental impact by pursuing resource efficiency" in the next circular economy.

The most challenging shift from current model to circular one should be after sales product collection from consumers for resale and material recycling. As EU adopted consumers' right of repair in April, 2024, some garment brands responded to install repair services in their retail outlets already. But current practice of product collection by brands remains passive, with some of the collected items being selected and resold by brands themselves, while resource recycling is handed to existing collection and sorting companies and brands hadn't closed the loop by themselves. The process after sorting brands pays little attention so even if the collected garments are sorted and recycled, it is extremely rare for the recycled materials to be used in a brands' own products. This is also due to the fact that the amount of recycled materials from textiles is still tiny, and the quality of the yarn is questionable, making it physically difficult to use them stably. Most of recycled polyester yarn on the market are made from pet bottles, the same starting material and most of them uncoloured so no need to conduct complicated decolorization processes but rather expensive than virgin poliester.

The new opportunity could be realized that MCP has



Note: ADF > Advance disposal fee; UCTS > Upstream combination tax/subsidy
Source: OECD (2013), *What have we learned about extended producer responsibility in the past decade? – A survey of the recent EPR economic literature*, Paris

Fig. 5. EPR policy instruments in the product cycle Source: OECD

In EU extended producer responsibilities (EPR) has been discussed to shift current business practices to circular economy, as advanced recovery deposit fee (ADF) to every products. Cho discussed extended

become the most efficient tool for managing material life cycle since every garment material has its resource limits. In a circular economy, garment brands should be aware that they are delegated when using some of finite

resource for their material, so they should take responsibility for material life cycle. The money brands paid for should be just purchasing the usage rights, not the possession rights as of current linear economy. Already EU Parliament and EU Council both endorsed a direct-ban on the destruction of unsold textiles and footwear (SMEs will be temporarily excluded)[22] to accelerate the shift to circular textiles though not intended to promote conceptual shift and denial of absolute ownership of the resource used.

To collect the product from consumer users, brands need to have their real customer information. Today the practice called customer relation management (CRM) became common practice among garment brands but only for the purpose of sales promotion activities mainly such as maximizing life time value within today's linear economy. It's only utilized as the marketing tool to promote cross sale, recommendation of new products based on their previous purchase, and demand forecasting based on the accumulated data.

In the next practice of circular economy these accumulated data, with the customers' consent, should be utilized to fulfill material circularity. MCP originally pursued the best match of customers and personalized products one by one. The next practice should be based on more firm trust between customers and brands. The context we should pay attention more that some portion of customers are worrying about their privacy information such as product size, address, contact information. They are also nervous on the product conditions of collected items so request to hand them in anonymous way. So brands should co-develop mutual trust step by step with their dedicated customers.

The environmental impacts should also be reduced but transportation and collection of individual products in MCP inevitablly move the lever reversally. Decarbonization should be fully considered in MCP operation to avoid boiling our mother earth. To meet such reqirement we need the tool to measure current pricise situation. We have not utilized standardized method for calculation of LCA yet so much effort to get the data of current figures under linear economy and the next practice of MCP. No data, no solution but we believe customized product should have the longer life cycle, high rates of collecting and recyclable design so MCP could contribute to eliminate impacts. In linear economy fixed order production of MCP has been regarded to eliminate over production but the burden of upstreem producers, namely textile and accecory manufactures would actually increase. The solution should be simple that whole valuc chain stakeholders should share all the information of their status with consumer customers, in other words, building firm trusted and customized network. The next practice should fully utilize smart configulators under customized and personalized network for every customers and the whole process should be customized and personalized. Beyond products, customized and personalized products and with their process might be also the solution for eliminating social and environmental impacts in circular economy.

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