



FBD_BMODEL
FASHION BIG DATA BUSINESS MODEL

D3.3

Business Cases



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1 Executive Summary

High quality and innovative technical and fashion products mainly result from more technological innovation and better skills of a qualified labour force.

Within this frame five industrial Business Cases as part of the FBD_BModel project are analysed and especially the influence of Mass Customization, Information and Communication Technologies (ICT) and Business Models is addressed.

First all the Business Cases are pictured in a nutshell, giving an idea what they stand for at the moment and want they want to reach within the near future The Business Cases are:

- Business Case 1: Fashion Shirts Made-to-Measure.
- Business Case 2: Technical Sportswear and Outerwear.
- Business Case 3: Technical Performing Underwear.
- Business Case 4: Men's Fashion Urban Wear and Performing Clothing.
- Business Case 5: Customized Performing and Fashion Accessories.

Then coming from a theoretical approach the main aspects of Mass Customisation were derived and their peculiarities within the Business Cases were asked by means of a questionnaire. These answers and complementary individual Business Models (using the Business Model Canvas) for today and tomorrow – all elaborated in a workshop together with the Consortium Members – build the basis of this document. Due to privacy issues detailed information has to be kept private, and some exemplifying results are shown.

These results serve as starting point for the industrial requirements when testing and validating the FBD_BModel (technical and organisational) results in the future. They will be furthermore the bottom line for the development of

- data driven industrial strategies with value chain scenarios for local value creation of small series on demand (see task T3.4); and
- business model archetypes within FBD_BModel project (T3.5).

2 Introduction and Approach

In the face of fierce global competition from non-EU countries, China and India, the Textile and Clothing Industry (TCI) must take advantage of technological advances to adapt and bring about genuine, lasting improvements. If this will not be achieved the industry's long term sustainability will be at stake and Europe will be left with unused and outdated production capacity. As in the past decade, the sector's added value has fallen by over 40%, and employment in the sector followed a similar downward trend, also falling by over 40%. In order to compete with the low cost/mass manufacturing approach of the East, the industry must innovate and reduce/cease the mass production of simple products, and instead concentrate on a wider variety of products with higher value-added. High quality and innovative technical and fashion products can only result from more technological innovation and better skills of a qualified labour force.

Within this frame, this Deliverable D3.3 will focus the areas of Mass Customization and the development of innovative Business Models:

- Mass Customization forms together with open innovation the interactive value creation¹. As a matter of fact, customers do not see themselves any longer as passive recipients of services provided by one manufacturer. They take the chance to cooperate and socially exchange in different stages of the value creation process. This results in different forms of cooperation between the extremes of completely manufacturer-dominated and completely externally dominated production. The initiative to cooperate has two kind of starting points (whereas the first one is much more common): A company provides resources and the needed infrastructure for external contributions or external actors start autonomously and share it later with a company.
- A business model usually describes the rationale of how an organization creates, delivers, and captures value, in economic contexts. Especially the Business Model Canvas is a strategic management and lean start up template for developing new and documenting existing business models. It is a visual chart with elements describing the value proposition, infrastructure, customers, and finances. It assists organisations in aligning their activities by illustrating potential trade-offs.

Within this Deliverable D3.3 it will be described how the needed information regarding Mass Customisation aspects and Business Models for the five Business Cases were analysed and a basis will be set up for the data driven industrial strategies and the upcoming model archetypes.

¹ See Piller (2009), p. 52

3 The Business Cases

3.1 Business Case 1 – Fashion Shirts Made-to-Measure

Bivolino.com (commercial name of Douëlou) is a SME based in Belgium established in 1998. At the current state the company consists of two main business units.

The **fashion department** is in charge of the B2C clothing business. The entire value chain is covered via web shop, 3D configuration, visualization, CAD, manufacturing and delivery. The user-designed shirts and blouses are produced through a fully automated production fulfilment system that connects all partners in the value chain. In 2014 more than 50.000 shirts ran over the E-configurators. Bivolino.com was nominated for the Starters Award for best e-shop in the Netherlands in 2004 and has won the award for the most innovative unique “gift certificate”.

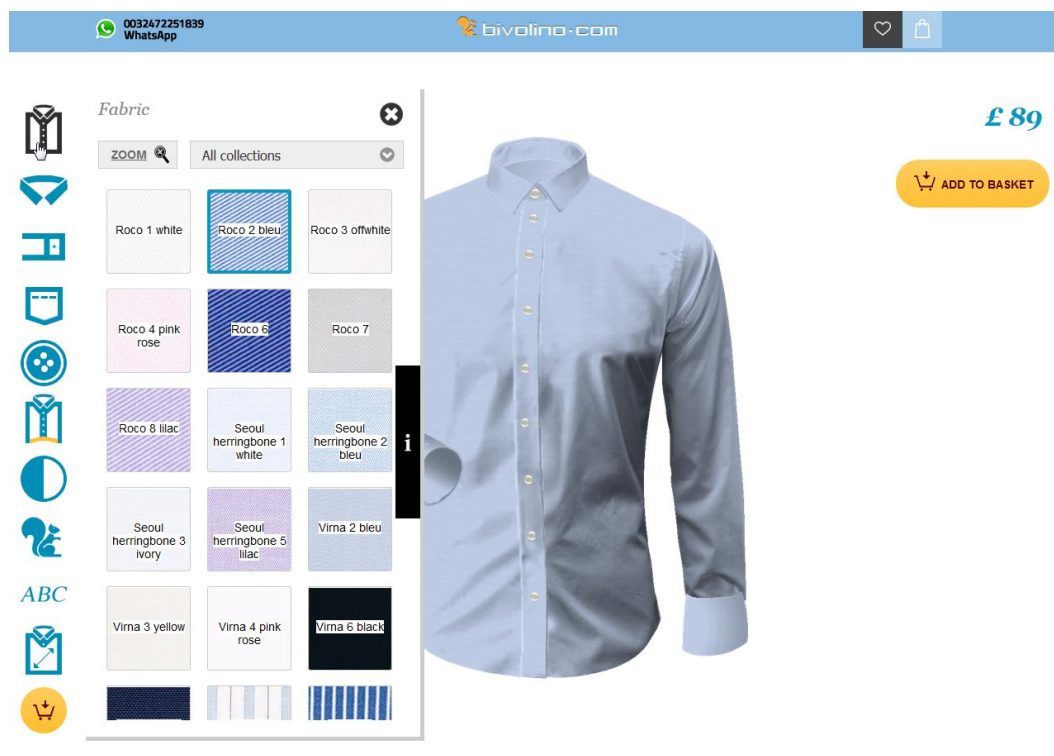


Figure 1: Screenshot of the configurator of Bivolino.com

Main technical features are (in order of relevance):

1. Made to measure;
2. Easy-care (no-press, no-shrink, washability and colour fastness); and
3. Breathability/thermal comfort.

Value added features here are stain resistance, anti-static and anti-microbial.

All shirts here are produced on demand within 10 days covering all possible sizes and fits, including the choices of double cuff, short sleeves, with pocket, with monogram etc. The simple Bivolino biometric sizing technology guarantees a perfect fit without measuring tape; only height, collar size, weight, age and fit are asked. Bivolino guarantees here, if the first delivered shirt does not fit, a 2nd shirt will be sent out free of charge.

As the fashion business model is replicable it was decided some years ago to set up a new department called **BivolinoServices.com** developing ICT solutions for the fashion industry. The objective of this business unit is to increase the number of innovative standardized internet-based services that can be easily integrated in other fashion ecosystems and networks.

Some technologies offered in the **BivolinoServices.com** are:

- Patented biometric sizing technology, which makes it possible to obtain a good fit without the use of a measurement tape. This unique measurement system guarantees maximum 4% complaints and nearly no returns.
- An e-Mass Customization service model enabling the customers of web shops all over Europe to create personalized garments in a 2/3 D environment.
- Supply chains for made-to-measure and made-to-order garments (lot size 1 and small series), deliverable within 10 days.
- Unique possibilities for consumers with particular wishes (e.g. having an artwork printed on their garment(s)) and needs (e.g. disabled persons, like wheel chair users and obese people).
- Extended e-commerce features including social media, e-market places, open multi-sided C2C and B2C platforms.
- Platform with open APIs for a real-time processed and integrated supply chain including manufacturing and logistics.
- Webservices and (basket) integration into major e-commerce marketplaces/portals.
- Human/Machine interactions between CAD, CAM, ERP – digital cutting-3D printing – digital fabric printing – embroidery-sewing.

Bivolino will demonstrate in this frame a Big Data driven B2C and B2B2C co-creative business model for made-to-order and made-to-measure fashion in men's shirts. The garments will be processed through a virtual e-commerce driven supply chain with potentially zero returns, and a sustainable eco-footprint manufacturing in the Mediterranean area. So the mainly required technical features for Bivolino products are made-to-measure and easy-care (e.g., no-press, washability), breathability and thermal comfort on the skin are also two important parameters, as well as other added-value functionalities: stain resistant; anti-static; anti-microbial. The production process is characterized by a customization, on-demand, made on digitally printed fabrics with made-to-measure shirt-cut files and real-time processed patterns, to be easily sewed and assembled in a single-piece manufacturing.

3.2 Business Case 2 – Technical Sportswear and Outerwear

Company Azadora S.r.l. is a modern, technological and versatile garment collections maker in close contact with the greater Italian and International fashion houses. Azadora facilities, located in Tuscany (Italy), cover 3,000 square meters, inside of which all manufacturing phases are performed by staff with many years of experience: “fast, accurate, coordinated and reliable”.

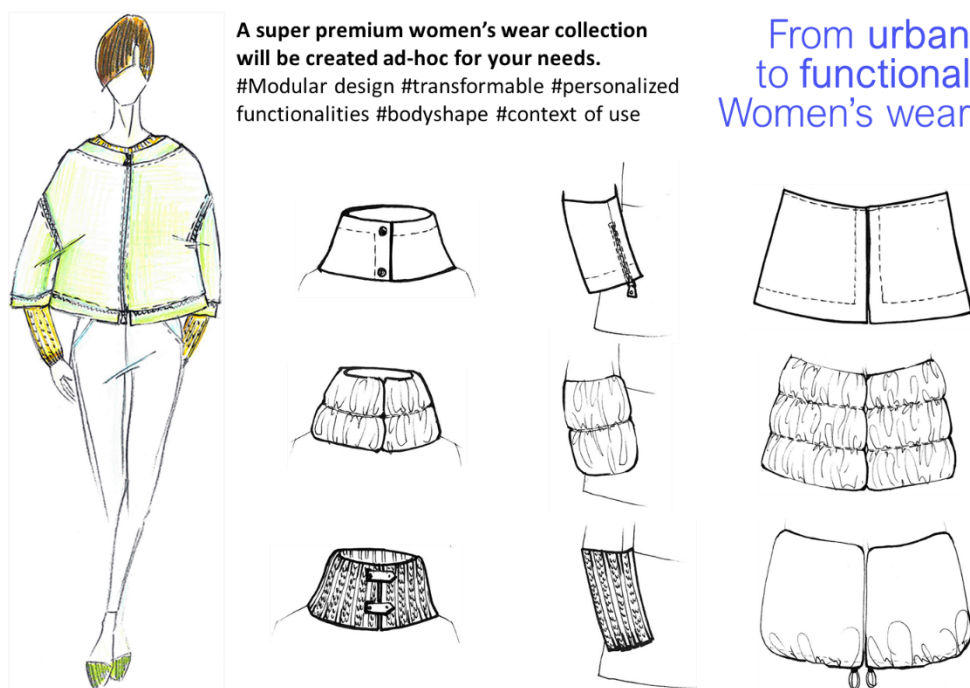


Figure 2: Azadora on-demand customization services

Starting from a series of basic models, working on them through different styles and functionalities, directly involving the customers from the very beginning of the product development, the result is a product that fits with customer needs, according to context of use, trends, functionalities, and lifestyles.

Main technical features are (in order of relevance):

1. Breathability/thermal comfort;
2. Lightweight;
3. Stain/water resistance;
4. Bacteriostatic; and
5. Multi-configurable garment (a product containing a multi-garment set-up).

Value added features here are easy-care, anti-static and made to measure.

In the production process the garment will be manufactured using a garment modularity approach in which the final product is made of parts for which a multi-configuration of the garment can be easily achieved, in a way so that the product will contain a potential multi-garment set-up. From the technical point of view, it will also incorporate the most innovative thermal comfort technologies, and breathability features, mainly provided by Grado Zero Espace S.r.l.



Figure 3: One model countless configurations

The garment will be assembled using the most innovative seamless technologies (mainly ultrasonic and thermal welding), and will incorporate, on-demand, sensors for the garment's microclimatic data management and user tracking and connectivity.

Azadora is a constantly evolving company in relation to its development and commitment in the search for solutions, and innovative production techniques. Through the adoption of the innovative seamless assembling technologies the company has, it is possible to obtain a stylish final product of high performance and excellence, giving the garment produced characteristics of absolute distinction and modernity.

Azadora can boast important certified production standards in its facilities, for quality management, social accountability, occupational health and safety management. In fact, the company has achieved, in 2005, the important goal of obtaining ISO 9001, OHSAS 18001 and SA 8000 certifications. The company it's also using an advanced CAD modelling system provided by OPTITEX² (a Fashion Design SW), as well as an automated fabric cutting system, and is going to introduce in its supply chain and production system a product data management (PDM) SW (from FKGROUP³), that will lead the company towards a fully product development and fabrication digitization.

Azadora will use the possibilities of Big Data in order to sell via web shops and digital shops (B2C) personalized garments for women's wear, also using co-branding for high-end & luxury markets (B2B).

The product line will be focused on the concept of a multi-garment set-up, in which, using a garment modularity approach, the final product can be potentially made of parts attachable/detachable/foldable, through which a multi-configuration of the garment can be easily achieved.

The main required technical features for Azadora products are breathability and thermal comfort, as well as lightweight. Other important functionalities are also stain and water resistance.

3.3 Business Case 3 – Technical Performing Underwear

Kuvera S.p.A. and Inticom S.p.A. merged together form the Pianoforte Holding S.p.A., jointly led by the two Italian founding families: Cimmino and Carlino. The Group is legally based in Milan and operates through two main Headquarters strategically located in Nola (near Naples, in the south) and Gallarate (near Varese, in the north), in Italy.

Kurvera S.p.A. runs 1278 shops in 43 countries (942 shops in Italy), employs 1700 people in 7 countries, having a turnover of 500 Million € by selling more than 32 Million pieces. The portfolio of Brands the Group holds, is composed by: Yamamay (stylish underwear), Carpisa (accessories and luggage) and Jaked (technical underwear).

The main strategy of the Group (including the brands Yamamay and Carpisa) is to improve the market in Europe always following a fundamental principle: the innovation. The innovation of stores, the innovation of strategy but most important thing: innovation of products.

In this Business Case 3 the brand Yamamay (supported by Jaked for the technical features) is in the focus.

² <https://optitex.com/>

³ <http://fkgroup.com/it/fkad-wom-pm/>

Brand

Yamamay products are glamorous, sexy and colorful with a distinctive Italian Spirit, designed for fashion conscious customers.

Target

The main target is over women aged 25-44, with a secondary target of younger women aged 15-24. Men and kids can also find an interesting variety of Yamamay products.

Products

Underwear, beachwear, homewear, hosiery, cosmetic products and accessories.

Pricing

Affordable but not cheap!
 Bras price range from € 19,90 to 39,90.
 Beachwear tops from € 14,90 to 39,90.




- Founded in 2001, Yamamay is a leading Italian mono-brand retailer in underwear and beachwear.
- Product range: corsetry, lingerie, beachwear, nightwear, garments, hosiery, cosmetics, shoes and bags.
- Mono-brand store network: 670, of which 500 in Italy.
- Turnover 2015: €140m

Figure 4: The brand Yamamay by Kurvera

Main technical features are (in order of relevance):

1. Breathability/thermal comfort;
2. Bacteriostatic; and
3. Easy-care.

Value added features here are biocompatibility, made to measure and anti-static.

The garment is made by deploying seamless technology, which makes it possible to combine materials of different thickness and structure without the need for stitching. Thus, the designer can create special zones in the garment, which ensure enhanced thermal insulation and the efficient elimination of the moisture, and thereby maintain the ideal microclimate during the garment use. All this in a very comfortable and stylish garment, assuring the maximum biocompatibility with a perfect fit.

The ultimate chapter in history of technical products regarding the product concept line proposed by Yamamay/Jaked, regards a dynamic world that, through this movement continually expresses its sporting soul: Hence the concepts of Fluidity, Dynamism, Grip, Protection, Ergonomics, Lightness, Water repellency and Waterproofing.

For both there is a wide range of products, all aimed at the sport addicted. All items have one or more active functions. Performance is the key word. Form is useless without function: form and function; style and technique; past and future. Conjugating technical features and style, the job of the designer is like that of a fine craftsman and it is a combination of many elements. Passion is the thread that binds them together.

ACTIVEWEAR PRODUCT – the product line embodies all the companies' know-how in terms of technology, style and design. The garment is finally designed to maximise functionality. Light, practical and responsive, it provides protection and an ergonomic fit. Smart fabrics stand at the centre of this garment concept. It provides functional wear and performance and can be used even for everyday activities. The result is apparel that is perfect not only for all sport enthusiasts but also for people that are looking for customization: always with style and fashion. These items have high-performance materials and have technical details that make all the difference.

Each end-consumer can customize his/her product by all kind of dimensions, materials, functionalities and so on, mainly following two special product cases:

Each end consumer can customize his product by all kind of dimensions, material, functionality and so on.

There will be two products regarded in this Business Case:

- Seamless Skin T-shirt.
- Seamless leggings in technical fabric.



Figure 5: Seamless skin T-Shirt and seamless technical leggings

T-shirt is made from NILIT® Heat Seamless fabric. The material, worn next to the skin, guarantees warmth and natural insulation, as well as having antibacterial properties with a strong deodorant effect and continuous dry feeling. The material is highly tight-knit and breathable, with flat seams to prevent irritation and rubbing, for total comfort. This style, with long raglan sleeves and a high neck, has a practical zip closure under the chin and a maxi contrast print on the front. The wrist openings for thumbs ensure comfort and practicality.

The leggings are wearable all year round thanks to their thermoregulatory properties and the absorbency of the fibres, which remain intact even after repeated washing. Made from NILIT®

Aquarius Seamless fabric, they move moisture away from the body thanks to special micro-canals formed by the fabric, guaranteeing optimal breathability and keeping skin dry. The elastic component of the material, together with the ergonomic mapping of the item, ensures a practical and comfortable fit.

So, the end consumer must have the possibility to choose:

- Material;
- All body dimensions:
 - Length of sleeves;
 - Neck diameter;
 - Chin diameter;
 - Waist and bust dimensions;
 - Etc.
- Shape (colours, fashion);
- Thickness of fabric; and
- Degree of thermoregulation (thermal comfort).

Different fabrics from the NILIT® ones can be also chosen, in any case produced in Europe.

The products are aimed at the following categories of consumers:

- all sports addicted people but also for daily use;
- disabled people that needs a great customization;
- all people with especially physical characteristics

The sale is completely via Web and digital channels.

About supply chain, at the moment Carpisa and Yamamay/Jaked produce in Asia, it's so necessary to establish new suppliers in the Mediterranean area.

The business case is completed with the innovation of the supply chain structure developed and implemented, according with the following steps:

- Each finished garment should be accompanied by its registry with the detailed set of all the characteristics chosen.
- The customer should be able to see the worn garment on his AVATAR. With the possibility of a perfect 3D rendering or even with the enhancement of Virtual Reality/Augmented Reality tools.
- The platform should return, upon confirmation of the customer's order, correct delivery times. These must be related to the type of configuration and calculated from time to time during the customization phase.
- The final price should be constantly updated during the product configuration phase.
- In case of return of the garment for any reason (right of withdrawal), the garment can obviously be returned but must be merged into an "outlet" section of the platform. This section can be accessed by selecting "ready to wear" items with discounted prices.

Even in this section, however, the customer must be able to enter their data and view only the “ready to wear” garments that meet their needs and physical characteristics (or those with a percentage of compliance with their choices).

3.4 Business Case 4 – Men’s Fashion Urban Wear and Performing Clothing

In 1992 BESTE is established by Giovanni Santi. From the very beginning, Beste decided to revolutionise cotton production by utilising a quality-inspired approach by means of researching sophisticated solutions, using techniques traditionally reserved for so-called noble fibres; wool and cashmere. The mission of the company is a multi-fold goal: (a) In some cases is to make a designer’s vision come to life; (b) In others it is to seek through the market in search of accessories, materials or technologies; and (c) Some other times it is a matter of hypothesizing on what does not yet exist, developing a repertoire of fresh solutions to share with the clients.

Today at Beste, they work with the most known brands in the world on the semi-finished and finished fabrics, for motives of quality, prestige and international presence, but they also produce their own limited garments series with their own brands.

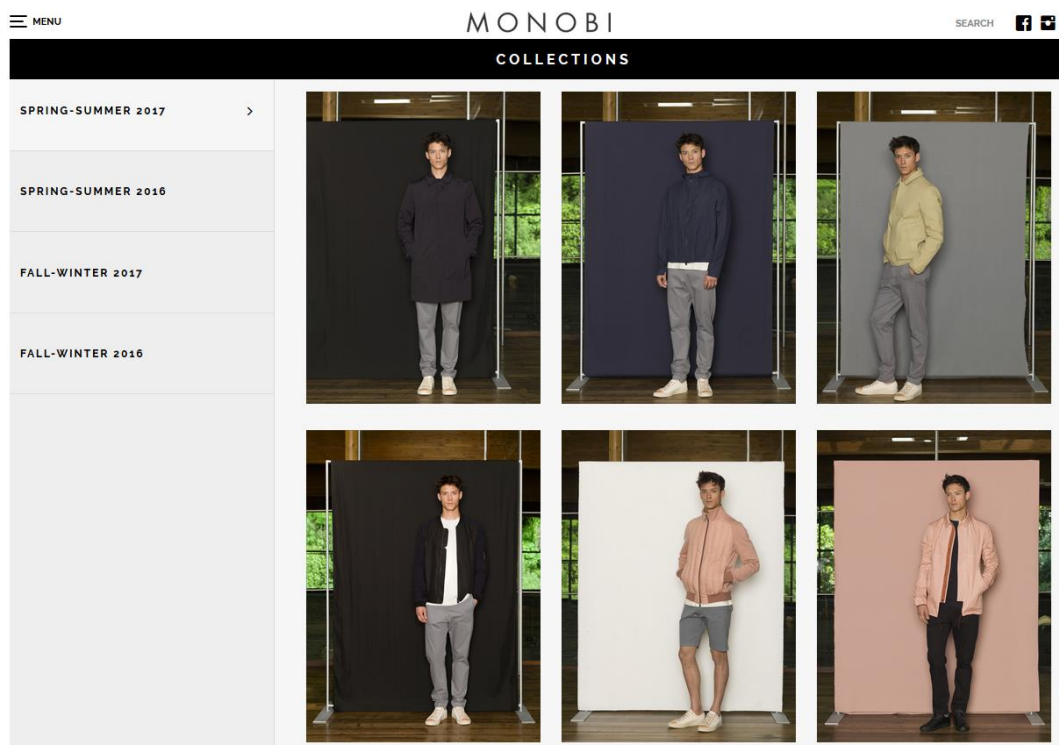


Figure 6: Screenshot of the Monobi collection by Beste

MONOBI⁴ is one of these, with a policy which is orientated towards innovation, experimentation, aesthetic style and the quality standards of the fashion sector, with added-value technical features. A combination of technical excellence, quality and elegant solutions have reinforced company's name and reputation in the textile industry, a standing and commitment which has been continually consolidated through the establishment of Beste Japan, Beste China and the joint venture H&B in Anqing (Anhui province) in China.

Main technical features are (in order of relevance):

1. Breathability/thermal comfort;
2. Easy-care;
3. Made to measure; and
4. Windproof

Value added features here are stain/water resistance, anti-static and bacteriostatic.



Figure 7: Example of the Monobi urban style

The production process is defined from the point of view of designing and construction a garment that can fit in the fashion urban life style connotation and, at the same time, keep all of its protective and functional capabilities, through the use of hot and ultrasonic welding processes. Introduced as an additional element to the normal protective and performing features, the presence of sensors is capable of placing the user in a direct dialogue with the

⁴ <https://www.monobistudio.com/>

surrounding environment. The sensing unobtrusive system should be able to localize the user, detect temperature, measure the degree of electromagnetic pollution, and also be able to establish a stable 'dialogue' with the digital eco-system and the communication channels of the brand, reporting a daily journey diary of the garment use.

Furthermore, the concepts of sustainability and of social responsibility expanded. After years of progress and evaluations on the ecologic front, Beste joined Greenpeace Detox Project, by taking on the responsibility of eliminating by 2020 any sort of negative substances for mankind and for the environment from their productive cycles and from their large supply chains.

Beste wants to use the possibilities of Big Data and supply chain solutions to support its digital strategy of selling via the Web, of a unique product line coming from the deliberate encapsulation of a typical outerwear performing style to a sense of "aesthetic" akin to the most fashionable and urban collections, putting into play a series of technological skills and innovative digital tools.

Laser, ultrasounds, seamless sealing and thermo taping techniques - used in its product line - are typical elements of a product that aims to be both functional and highly performing, while being oriented to a more metropolitan & urban context, that is the field to which it is best suited.

In the Beste business case, the garment is not a barrier, it's not only necessary used to protect oneself from a hostile environment, it's a bridge, a tool for the interactive e-dialogue, for the e-communication of the customer with the surrounding urban environment.

3.5 Business Case 5 – Customized Performing and Fashion Accessories (Luggage & Backpacks)

Kuvera S.p.A. and Inticom S.p.A. merged together form the Pianoforte Holding S.p.A., jointly led by the two Italian founding families: Cimmino and Carlino. The Group is legally based in Milan and operates through two main Headquarters strategically located in Nola (near Naples, in the south) and Gallarate (near Varese, in the north), in Italy.

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As mentioned before in Business Case 3 the main strategy of the Group (including the brands Yamamay Jaked and Carpisa) is to improve the market in Europe, always following a fundamental principle: the innovation. The innovation of stores, the innovation of strategy, and most important thing: innovation of products.

This goal goes much through luggage, underwear and beachwear items, so that the Holding has decided to create a new team of Research and Development to look after from the study of existing materials, looking for innovative ones, environmentally sustainable and super strong up application of new products and highly competitive. In the last two years the Group has founded a Research and Development department with two laboratories involved, in order to create innovative products (luggage, underwear and beachwear items), with innovative materials and new functionalities.

In this Business Case 5 the brand Carpisa of Kuvera is in the focus:



CARPISA

MISSION

CARPISA



CARPISA
 Carpisa's mission is to offer a strongly creative and absorbing lifestyle proposing a wide range of handbags, luggage, wallets and accessories.
 ITALIAN BY DESIGN, PERFECT COMBINATION OF FASHION, QUALITY AND PRICE
 BEST VALUE FOR MONEY

- Founded in 2001, Carpisa has built up one of the leading European retail networks in fashion handbags and luggage.
- Product range: handbags, luggage, small leather goods and accessories ;
- 2015 mono-brand stores network: 584, of which 418 in Italy.
- Turnover 2015: €145m

Figure 8: The brand Carpisa by Kurvera

The main required technical features (in order of relevance) are:

1. Ergonomics/ventilation;
2. Lightweight; and
3. Easy-Care.

Value added features here are stain/water resistance, anti-static and bacteriostatic.

Also in the case of the accessories, the production will be made using seamless technologies (ultrasonic and thermo-welding), to combine materials of different thickness and structure without the need for stitching. A predefined design by the user will allow to disconnect functional parts of the backpack (pockets or a pouch bag), linked with zips or fasteners to make these parts 'accessories of the main accessory' and usable by their own. The backpack could contain rigid parts – as an internal frame detachable – which can transform it into other

objects, such as a chair, an umbrella or that like. Also in this case connectivity will be considered as a fundamental added-value.

Carpisa is already improving several systems and business lines to customize product coming from request of customers by tattoo luggage project, a configurator for backpack and luggage with visualization in VR/AR Mode and a special range in carbon fibre totally customized by customer for small series production.

Regarding Special technical backpack the target group are people with particular body characteristics. For example:

- Overweight people;
- People too tall (above average); and
- People too low (below average).

The online configurator must permit to customize:

- 1) Shoulder length;
- 2) Frontal webbing with buckle;
- 3) Sponge on the back;
- 4) All technical functionalities (USB charge, number of pockets, inside dividers, etc.);
- 5) Kind of material (nylon, polyester);
- 6) Fabric colours;
- 7) Global dimension of backpack in terms of measures and volume;
- 8) Number of inside compartments.

Also, in this case all customizations are made by the Website.



Figure 9: Pictures of the special technical backpack

About supply chain, as told above for the Business Case 3, at the moment Carpisa and Yamamay/Jaked produce in Asia, it's so necessary to establish new suppliers in the Mediterranean area.

The business case is completed with the innovation of the supply chain structure developed and implemented, according with the following steps:

- Each finished garment should be accompanied by its registry with the detailed set of all the characteristics chosen;
- The customer should be able to see the worn garment on his AVATAR. With the possibility of a perfect 3D rendering or even with the enhance of Virtual Reality/Augmented Reality tools;
- The platform should return, upon confirmation of the customer's order, correct delivery times. These must be related to the type of configuration and calculated from time to time during the customization phase;
- The final price should be constantly updated during the product configuration phase;
- In case of return of the garment for any reason (right of withdrawal), the garment can obviously be returned but must be merged into an "outlet" section of the platform. This section can be accessed by selecting "ready to wear" items with discounted prices. Even in this section, however, the customer must be able to enter their data and view only the "ready to wear" garments that meet their needs and physical characteristics (or those with a percentage of compliance with their choices).

4 The Survey Methods

As mentioned before the fields of Mass Customization and the influence of Big Data will be surveyed for the Business Cases. In order to do so

- a questionnaire has been developed for getting as much relevant information as possible in a limited time space; and
- the business model canvas has been applied for the current state and the future business models of the Business Cases.

4.1 Structure of the Questionnaire

The questionnaire developed here was asking the status quo within FBD_BModel concerning aspects of Mass Customization and Big Data. It was structured in several parts covering general information about the company regarding the Business Case(s) and the main aspects of Mass Customization and Big Data like

- Corporate Culture for Innovative Leadership;
- Organizational Structure;
- Information Technology (IT) Landscape;
- Employees;
- Customer Integration;
- Access to Additionally Needed Assets and Resources;
- Network Integration; and
- Legal Framework.

All questions belonging to these aspects had to be answered and in addition it was asked for the soundness of the answers given. This reflected that there often is a lack of confidentiality even if the questions are truly answered.

The following figures will illustrate the main parts of the questionnaire answered by the four companies and their Business Cases (5 in total, i.e. one company is owner of two Business Cases).

Does your corporate culture supports flexible decision structures?
Please cross the appropriate answer.

Yes ☐

No ☐

Is there a strict hierarchy?
Please cross the appropriate answer.

Yes ☐

No ☐

Concerning your answers, please give a rate of the soundness of data.
Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

Figure 10: Questionnaire – Corporate Culture for Innovative Leadership

Does your organizational structure supports flexible handling of activities and to which degree?
Please cross the appropriate answer.

Very low degree	Low degree	Medium degree	High degree	Very high degree

Is there, in general a strict sequence of activities in the value creation processes?
Please cross the appropriate answer.

All processes are strictly structured	Most of the processes are strictly structured	A few processes are strictly structured	Most of the processes are flexible structured	All of the processes are flexible structured

Concerning your answers, please give a rate of the soundness of data.
Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

Figure 11: Questionnaire – Organizational Structure

Does your IT Landscape support open interfaces?
Please cross the appropriate answer.

Yes ☐

No ☐

Is there a continuous IT support from development to production?
Please cross the appropriate answer.

No IT support	The support is highly interrupted	The support is partly existing	The support is to a wide extend implemented	There is a continuous IT support
---------------	-----------------------------------	--------------------------------	---	----------------------------------

Please cross the value creations steps where IT systems are linked (interoperations)¹.

Idea Generation	Concept Developm.	Prototyping	First market test	Market launch	Production	Make Up	Sales	After Sales	Value Creation Steps
-----------------	-------------------	-------------	-------------------	---------------	------------	---------	-------	-------------	----------------------

Concerning your answers, please give a rate of the soundness of data.
Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high
----------	-----------	--------	------------	-----------

Figure 12: Questionnaire – Information Technology (IT) Landscape

Overall, are your employees skilled and qualified for decision making, in flexible situations?
Please cross the appropriate answer.

Not at all	Only a few	Most of them	The majority	All of them
------------	------------	--------------	--------------	-------------

Are employees available to work in a flexible production (being multi-skilled)?
Please cross the appropriate answer.

Not at all	Only a few	Most of them	The majority	All of them
------------	------------	--------------	--------------	-------------

Concerning your answers, please give a rate of the soundness of data.
Please cross the appropriate answer.

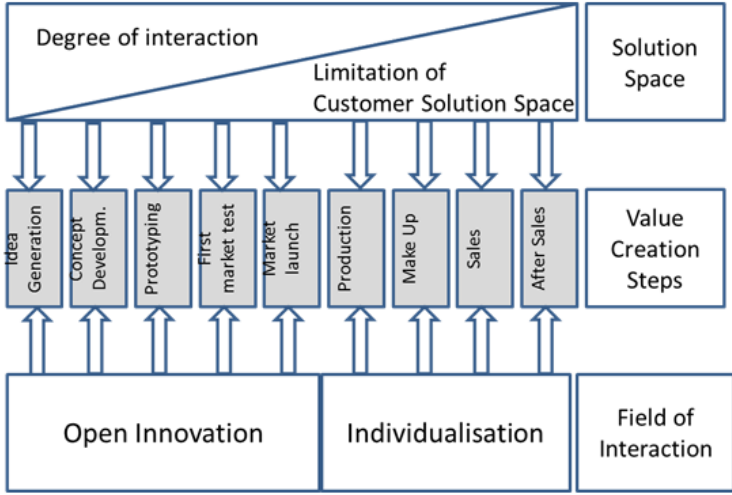
Very low	Quite low	Medium	Quite high	Very high
----------	-----------	--------	------------	-----------

Figure 13: Questionnaire – Employees

How deep are the customers integrated into your development and production processes?
Please cross the appropriate answer.

Not at all	Only a bit	Quite well	Very well	Totally

Please, cross in the following figure the value creation step (marked in grey) to which the customer is allowed to interact with your development/production process?



Concerning your answers, please give a rate of the soundness of data.
Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

Figure 14: Questionnaire – Customer Integration

How good is your access to additionally needed assets (production resources, products, services, manpower etc.) during the development and production processes?
Please cross the appropriate answer.

Very difficult	Quite difficult	It depends	Quite well	Very good

Is it difficult to integrate additional required assets to the processes?
Please cross the appropriate answer.

Not at all	Only a bit	Quite well	Very well	Totally

Concerning your answers, please give a rate of the soundness of data.
Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

Figure 15: Questionnaire – Access to Additionally Needed Assets and Resources

How good is the integration (concerning planning, trust, legal issues, data exchange, seamless data processing etc.) into development and production networks?

Please cross the appropriate answer.

Very low integration level	Low integration level	Medium	High	Very high

Is there a shared data pool?

Please cross the appropriate answer.

Not at all	Exchange on demand (date is processed with order)	Shared master data	Pool with a few particular partners	All data shared in a cloud (access only for network members)

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

Figure 16: Questionnaire – Network Integration

Does your product have legal restrictions (regarding ecological, security/safety issues and data protection, privacy issues, intellectual property rights etc.) limiting mass customization?

Please cross the appropriate answer.

No restrictions	A few restrictions	Some restrictions	Many restrictions	Very high restrictions

Please name the restrictions:

.....

.....

.....

.....

Figure 17: Questionnaire – Legal Framework

Finally a field was left asking as open question for “Further Comments Concerning Your Status Quo in Mass customisation and Big Data Aspects”.

4.2 The Business Model Canvas

The Business Model Canvas is a method for describing, analyzing, and designing business models.⁵ As already mentioned in the introduction it is

- a strategic management and lean start up template for developing new or documenting existing business models;
- a visual chart with elements describing a firm's or product's value proposition, infrastructure, customers, and finances; and
- it assists firms in aligning their activities by illustrating potential trade-offs.

The Business Model Canvas is one of the most common methods for describing Business Models and "... is like a blueprint for a strategy to be implemented through organizational structures, processes and systems".⁶

The Business Model Canvas was proposed by Alexander Osterwalder based on his work on Business Model Ontology and it consists of several so called building blocks as shown in Figure 18⁷:

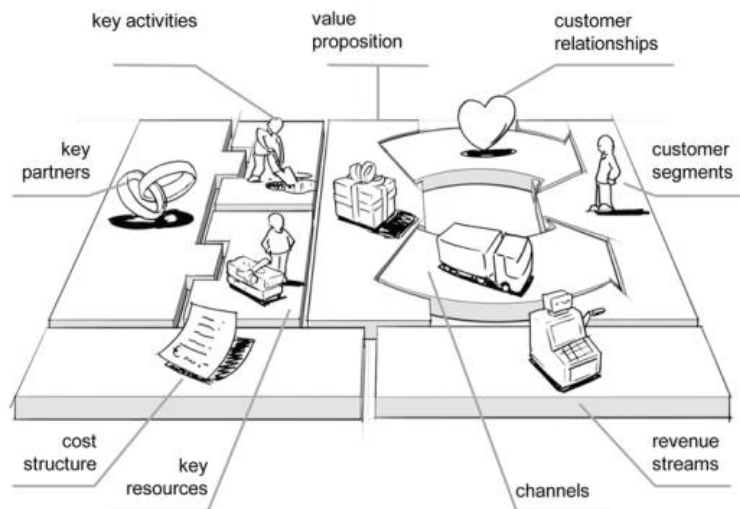


Figure 18: Building Blocks of Business Model Canvas

The idea is to find out what kind of value will be offered to the customers, what channels will be used to do this and what kind of relationships to the customers shall be installed. Furthermore it must be checked out what is needed to do so, what key partners, which key activities and which key resources are needed. And last but not least the monetary consequences have to be figured out: cost structure and revenue streams.

⁵ See Osterwalder/Pigneur (2010), p. 14

⁶ Osterwalder/Pigneur (2010), p. 21

⁷ See *ibid.*, p. 24-25

5 Survey on Mass Customization and Big Data

5.1 Procedure of Analysing the Data

Within a workshop end of March 2018 in Italy, all industrial partners were asked to fill in the questionnaire and the Business Model Canvas for today and future regarding their Businesses Cases(s).

The results of the questionnaire were gathered, and based on the answers and their soundness a radar chart was developed showing the 'value' of the answers and the 'confidence value' (including the soundness of the answers).

There was the assumption that the value of the answers to the questions within one of the several aspects of Mass Customisation and Big Data are of the same weight. This was due for all questions.

Additionally according to the given answers of the soundness of data, confidence factors and corrective factors have been defined. The derived corrective factor will be deducted from the given values of the answer in order to show in the radar chart – the besides the value – the confidence value.

Table 1: Confidence Factors and Corrective Factors

Soundness of Data	Confidence Factor	Corrective Factor
Very low	0,0	1,5
Quite low	1,0	1
Medium	2,0	0,5
Quite high	3,0	0,2
very high	4,0	0

The Business Model Canvas for all 5 Business Cases has been done within this workshop for the current state and the future Business Model. It was the main goal to get a common understanding (and of course a result) of the current business model strategy, being represented in a Business Model Canvas. The future Business Model will be used in the near future for deriving the strategy for the companies in order to reach their aims regarding the potential of Mass Customization and Big Data.

5.2 Results of the Survey – Public Example

As the results of the workshops were agreed to be treated anonymously, here will be shown a generalised example, following the same rules and procedures as the 5 Business Cases.

The radar chart of the generalised example (see Figure 19) shows the 7 main aspects of Mass Customization and Big Data. One aspect has been dropped 'Legal Framework' as the companies are not able to influence it (nevertheless it has been asked, as it could be a crucial issue). So a differentiated presentation of each Business Case is possible showing strengths and weaknesses of every aspect in the current situation.

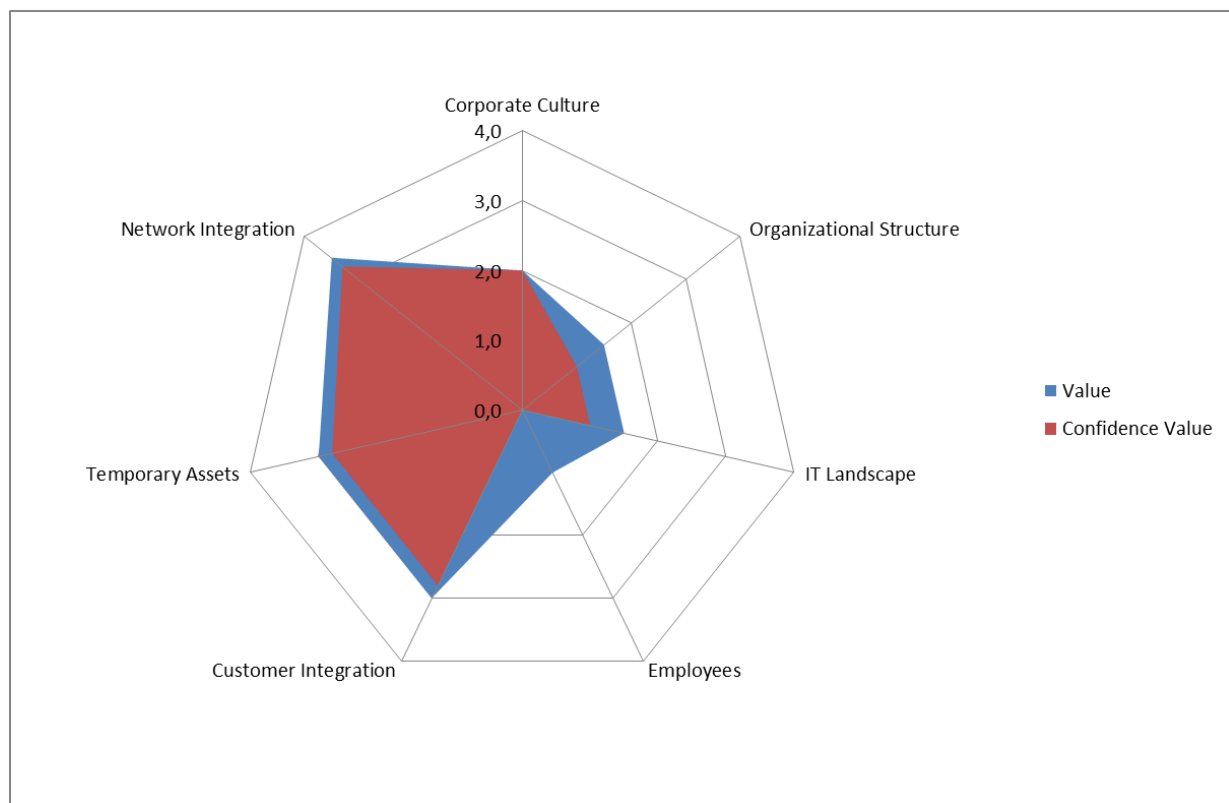


Figure 19: Public and generalised example in a radar chart

Here in Figure 19 there is shown a strong integration into networks, a wide pool of temporary assets and customer integration but lacking is the empowerment of employees, the integration into IT landscape, the fit of the organizational structure und a partly missing corporate culture for innovative leadership.

Anyway, the results of the Business Cases will be used for the next steps to look for improvements in particular aspects for every Business Case, according to their needs and the future Business Model.

As already mentioned the companies filled in the Business Model Canvas for their Business Case(s). And here there is due to confidentiality issues to apply the same rule: only the approach and a general model for a (current) business model are described.

First the nine building blocks, as presented in chapter 4.2, had to be transformed into something that resembles a painter's canvas allowing painting the picture of the current Business Model⁸:

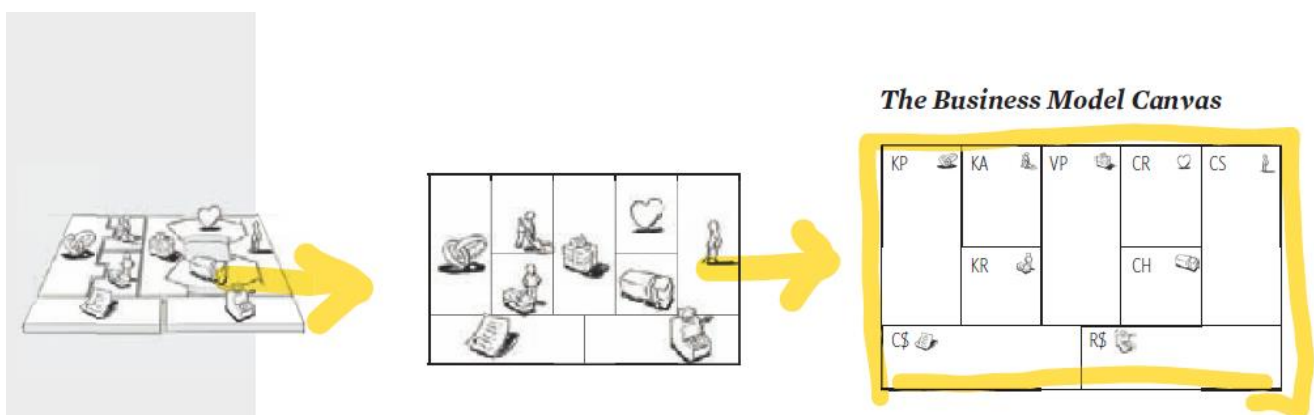


Figure 20: The Business Model Canvas

As there are several possibilities to start to fill in the building blocks, the following one was chosen:

- Starting from the 'Value Proposition';
- to the 'Customers';
- using which 'Channels' to reach the 'Customer';
- establishing which 'Customer Relationships';
- then defining the 'Key Activities';
- the 'Key Resources';
- the 'Key Partnerships';
- and finally looking for the 'Cost Structure'; and
- the 'Revenue Streams'.

The results look like it is picture in Figure 21⁹:

⁸ Osterwalder/Pigneur (2010), p.42

⁹ Ibid., p.46

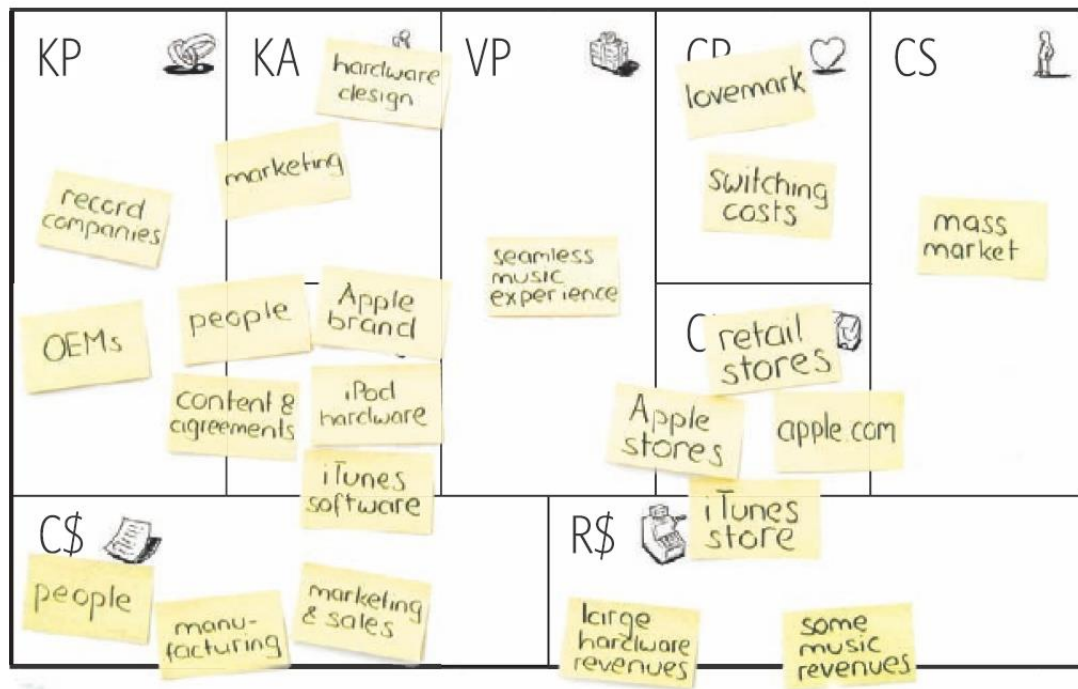


Figure 21: A general public Business Model Canvas – Apple iPod/iTunes Business Model

So 10 Business Models Canvas' have been filled and will be used to support the answers of the questionnaire, in order to derive industrial strategies with value chain creation of small series in demand.

5.3 Excursion: Business Model Canvas – FBD_BModel

In addition to the companies' Business Model Canvas another Business Model Canvas has been developed: the one covering the whole project idea. It was created to transport the idea and the vision of the FBD_BModel project:

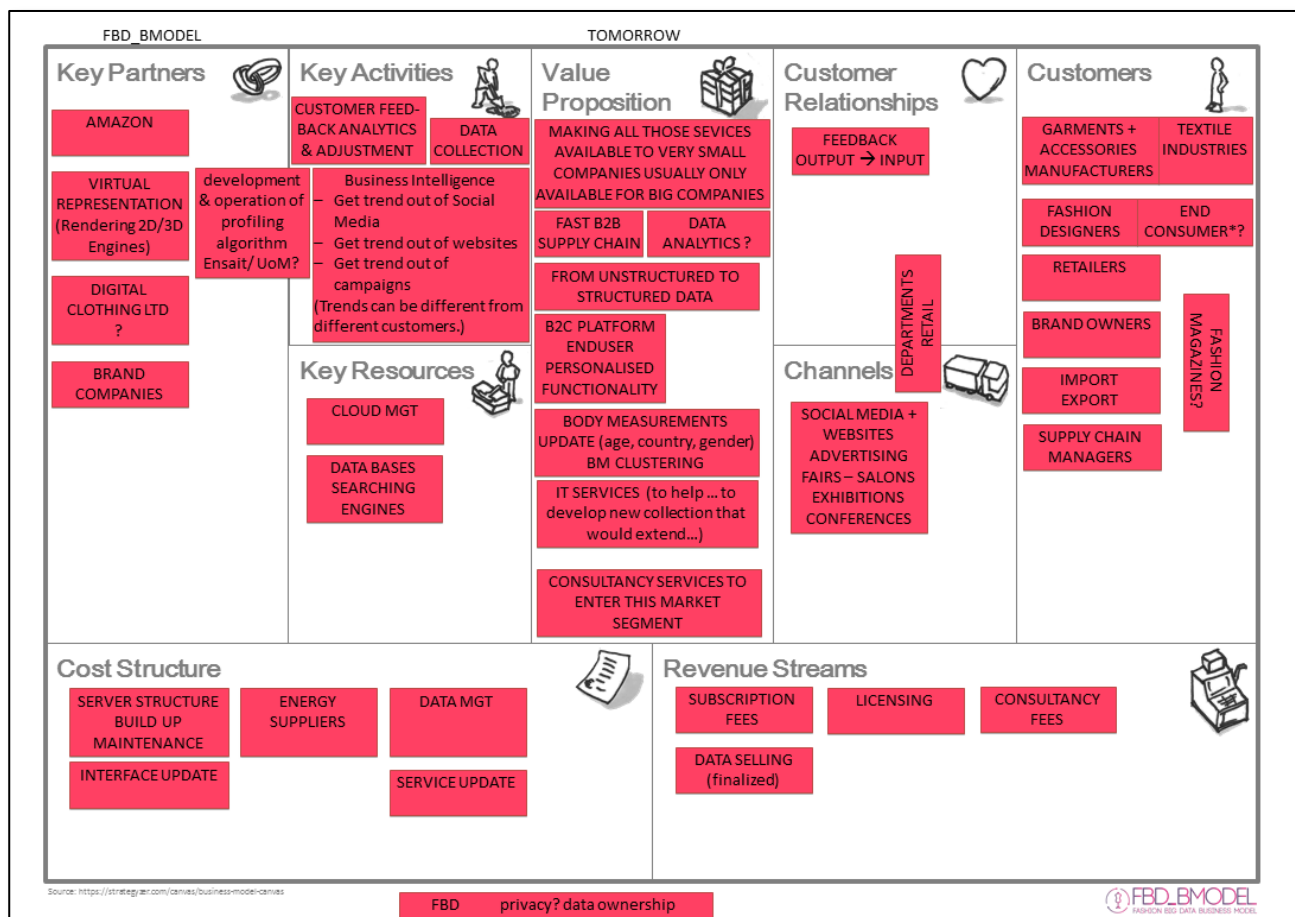


Figure 22: The Business Model Canvas for FBD_BModel

Here the following value propositions are listed, like

- making services available to SMEs;
- fast B2B chain;
- offering structured data;
- establishing a B2C platform for end users (including personalisation);
- body measurements, and
- IT and consultancy services.

They will be made available for all members and actors in the Textile and Clothing Industry (TCI) via the web (platform, social media) and offline events (fairs, exhibitions etc.).

Needed partners to create the value propositions are big marketplaces, virtual representations e.g. for rendering 2D/3D, brand companies in order to work with big data (data collections, analytics, business intelligence) by using cloud management and search engines.

The costs supposed to incur are soft- and hardware costs, energy suppliers and costs of data management and service updates. They shall be covered by subscription fees, licensing, consulting fees and data selling.

This is a glimpse on how the project outcome is seen at the beginning of the project. It will be updated and developed throughout the project, in order to needful advice.

6 Conclusions and Outlook

The main result as described in this document are the 5 industrial Business Cases, which each consists of the Mass Customisation position, related business models of today and tomorrow, and a qualitative indication of a potential implementation path of the FBD_BModel technical and organisational results for testing and validation.

These documents will be used for the requirements specification of the use case for the validation phase, as well as for the development of industrial strategies and archetypical business models.


The following statements describe the main findings:

- Innovative business models need an appropriate corporate culture, mind-set, skills and openness of enterprise management and all involved persons.
- The digitization of customer data/requests is a prerequisite for the industrial implementation of individualization.
- An individualization of the (product) offer is not only achieved by increasing the product variants (where the costs often increase too much), but also by adding complementary products and/or suitable services.
- The customer-specific solution should be offered within a certain time window, i.e. a short, comprehensible delivery time should be offered.
- Social issues relating to production conditions and ecological aspects cannot be neglected.

Facing the challenges of digitalisation, in terms of Industry 4.0, big data, artificial intelligence and e-commerce, the globalisation and diversification of the textile and clothing industry as well as consumers, and a tendency of bringing production back to Europe, the selected orientation towards Mass Customisation and individualisation is important, and the targeted means enabling a new, interactive way of developing clothing and organising production is even already “requested” by industry, and the focus to business modelling will strongly guide to increase competitiveness.

ANNEX 1 – The Filled Questionnaires

Business Case Fashion Shirts Made-to-Measure:

 HORIZON 2020		FBD_BModel - Questionnaire	FBD_BModel
---	--	----------------------------	------------

1 General Information about Your Company

Please enter your company data into the following table:

Name of your company:	BIVOLINO DUCHOV
Address:	KEMPISCHE STEENWEG 30356
Industry:	FASHION MTM SHIRTS BLOUSES
Main production sites (country / region):	TUNESIA
Products concerning FBD_BModel	MADE TO MEASURE SIZE PREDICTION
Customers (please answer if B2C or B2B)	B2C B2B B2B2C
And if B2B please name the sector(s)	CORPORATE / M&S / BANK

2 Mass Customisation and Big Data

2.1 Corporate Culture for Innovative Leadership:

Does your corporate culture supports flexible decision structures?

Please cross the appropriate answer.

Yes ☒

No ☐

Is there a strict hierarchy?

Please cross the appropriate answer.

Yes ☒

No ☐

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

				<input checked="" type="checkbox"/>
Very low	Quite low	Medium	Quite high	Very high

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HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

2.2 Organizational Structure

Does your organizational structure supports flexible handling of activities and to which degree?

Please cross the appropriate answer.

		X		X
Very low degree	Low degree	Medium degree	High degree	Very high degree

Is there, in general a strict sequence of activities in the value creation processes (development/production/sales)?

Please cross the appropriate answer.

			X	
All processes are strictly structured	Most of the processes are strictly structured	A few processes are strictly structured	Most of the processes are flexible structured	All of the processes are flexible structured

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			X	
Very low	Quite low	Medium	Quite high	Very high

2.3 IT Landscape

Does your IT Landscape support open interfaces?

Please cross the appropriate answer.

Yes ☒

No ☐

Is there a continuous IT support from development to production?

Please cross the appropriate answer.

				X
No IT support	The support is highly interrupted	The support is partly existing	The support is to a wide extend implemented	There is a continuous IT support

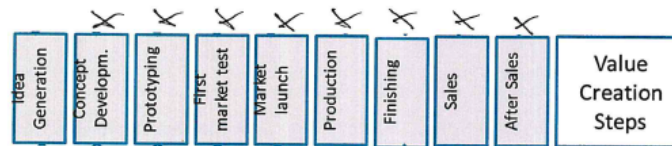


HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

Please cross the value creations steps where IT systems are linked (interoperations)¹.



Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			X	
Very low	Quite low	Medium	Quite high	Very high

2.4 Employees

Overall, are your employees skilled and qualified for flexible decision making in extraordinary situations?

Please cross the appropriate answer.

				X
Not at all	Only a few	Most of them	The majority	All of them

Are employees available to work in a flexible production (being multi-skilled)?

Please cross the appropriate answer.

			X	
Not at all	Only a few	Most of them	The majority	All of them

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			X	
Very low	Quite low	Medium	Quite high	Very high

¹ Reichwald / Piller (2009) Interaktive Wertschöpfung, Open Innovation, Individualisierung und neue Formen der Arbeitsteilung 2., vollständig überarbeitete und erweiterte Auflage



HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

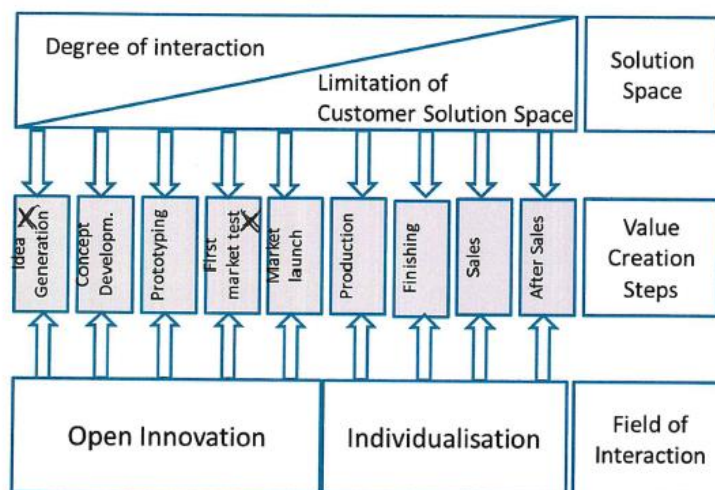
2.5 Customer Integration

How deep are the customers integrated into your development and production processes?

Please cross the appropriate answer.

			X	
Not at all	Only a bit	Quite well	Very well	Totally

Please, cross in the following figure the value creation step (marked in grey) to which the customer is allowed to interact with your development/production process?



Please, cross in the following table how is the integration into the value creation step of the customer:

Personal (face to face)	
Via (traditional) communication means (phone, fax, email)	X
Digital integrated via platform (e.g. company platform)	X
Direct integrated in process systems (e.g. ERP)	
Other, please specify below	

(Picture sent)



FBD_BModel - Questionnaire

FBD_BModel

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			<input checked="" type="checkbox"/>	
Very low	Quite low	Medium	Quite high	Very high

2.6 Access to Temporarily Needed Assets and Resources

How good is your access to additionally needed assets (production resources, products, services, manpower etc.) during the development and production processes?

Please cross the appropriate answer.

		<input checked="" type="checkbox"/>		
Very difficult	Quite difficult	It depends	Quite well	Very good

Is it difficult to integrate additional required assets to the processes?

Please cross the appropriate answer.

		<input checked="" type="checkbox"/>		
Not at all	Only a bit	Quite well	Very well	Totally

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			<input checked="" type="checkbox"/>	
Very low	Quite low	Medium	Quite high	Very high

2.7 Network Integration

How good is the integration (concerning planning, trust, legal issues, data exchange, seamless data processing etc.) into development and production networks?

Please cross the appropriate answer.

Very low integration level	Low integration level	Medium	High <input checked="" type="checkbox"/>	Very high



HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

Is there a shared data pool?

Please cross the appropriate answer.

Not at all <input checked="" type="checkbox"/>	Exchange on demand (date is processed with order)	Shared master data	Pool with a few particular partners	All data shared in a cloud (access only for network members)
---	--	--------------------	-------------------------------------	--

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	<input checked="" type="checkbox"/> Quite high	Very high
----------	-----------	--------	--	-----------

2.8 Legal Framework

GPRD (EU LAW DATA)

Does your product have legal restrictions (regarding ecological, security/safety issues and data protection, privacy issues, intellectual property rights etc.) limiting mass customization?

Please cross the appropriate answer.

No restrictions	<input checked="" type="checkbox"/> A few restrictions	Some restrictions	Many restrictions	Very high restrictions
-----------------	--	-------------------	-------------------	------------------------

Please name the restrictions:

GPRD (EU LAW DATA)
 AVD ? →



FBD_BModel - Questionnaire


FBD_BModel

3 Further Comments Concerning Your Status Quo in Mass customisation and Big Data Aspects

SOCIAL MEDIA IMPROVEMENTS ---

Thank you!!

Business Case Technical Sportswear and Outerwear:



FBD_BModel - Questionnaire
 FBD_BModel

HORIZON 2020

1 General Information about Your Company

Please enter your company data into the following table:

Name of your company:	AZADORA
Address:	VIA GUBBIO SNC
Industry:	TEXTAL CLOTHING
Main production sites (country / region):	ITALY
Products concerning FBD_BModel	
Customers (please answer if B2C or B2B) And if B2B please name the sector(s)	

2 Mass Customisation and Big Data

2.1 Corporate Culture for Innovative Leadership:

Does your corporate culture supports flexible decision structures?

Please cross the appropriate answer.

Yes ☒

No ☐

Is there a strict hierarchy?

Please cross the appropriate answer.

Yes ☐

No ☒

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

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FBD_BModel - Questionnaire

FBD_BModel

2.2 Organizational Structure

Does your organizational structure supports flexible handling of activities and to which degree?

Please cross the appropriate answer.

Very low degree	Low degree	Medium degree	High degree	Very high degree

Is there, in general a strict sequence of activities in the value creation processes (development/production/sales)?

Please cross the appropriate answer.

All processes are strictly structured	Most of the processes are strictly structured	A few processes are strictly structured	Most of the processes are flexible structured	All of the processes are flexible structured

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

2.3 IT Landscape

Does your IT Landscape support open interfaces?

Please cross the appropriate answer.

Yes ☐

No ☒

Is there a continuous IT support from development to production?

Please cross the appropriate answer.

No IT support	The support is highly interrupted	The support is partly existing	The support is to a wide extend implemented	There is a continuous IT support

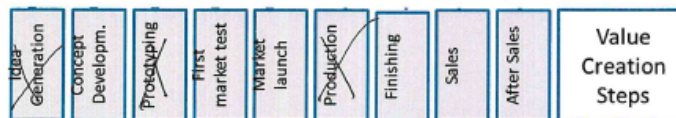


HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

Please cross the value creations steps where IT systems are linked (interoperations)¹.



Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

2.4 Employees

Overall, are your employees skilled and qualified for flexible decision making in extraordinary situations?

Please cross the appropriate answer.

Not at all	Only a few	Most of them	The majority	All of them

Are employees available to work in a flexible production (being multi-skilled)?

Please cross the appropriate answer.

Not at all	Only a few	Most of them	The majority	All of them

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

¹ Reichwald / Pillier (2009) Interaktive Wertschöpfung, Open Innovation, Individualisierung und neue Formen der Arbeitsteilung 2., vollständig überarbeitete und erweiterte Auflage





FBD_BModel - Questionnaire

FBD_BModel

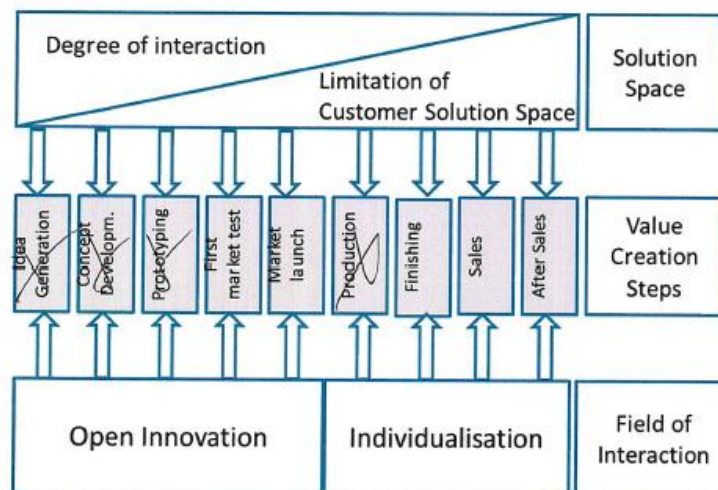
2.5 Customer Integration

How deep are the customers integrated into your development and production processes?

Please cross the appropriate answer.

Not at all	Only a bit	Quite well	Very well	Totally

Please, cross in the following figure the value creation step (marked in grey) to which the customer is allowed to interact with your development/production process?



Please, cross in the following table how is the integration into the value creation step of the customer:

Personal (face to face)	<input checked="" type="checkbox"/>
Via (traditional) communication means (phone, fax, email)	<input checked="" type="checkbox"/>
Digital integrated via platform (e.g. company platform)	<input type="checkbox"/>
Direct integrated in process systems (e.g. ERP)	<input type="checkbox"/>
Other, please specify below	<input type="checkbox"/>



HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

		<input checked="" type="radio"/>	<input checked="" type="radio"/>	ok	
Very low	Quite low	Medium	Quite high	Very high	

2.6 Access to Temporarily Needed Assets and Resources

How good is your access to additionally needed assets (production resources, products, services, manpower etc.) during the development and production processes?

Please cross the appropriate answer.

			<input checked="" type="radio"/>	
Very difficult	Quite difficult	It depends	Quite well	Very good

Is it difficult to integrate additional required assets to the processes?

Please cross the appropriate answer.

		<input checked="" type="radio"/>		
Not at all	Only a bit	Quite well	Very well	Totally

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			<input checked="" type="radio"/>	
Very low	Quite low	Medium	Quite high	Very high

2.7 Network Integration

How good is the integration (concerning planning, trust, legal issues, data exchange, seamless data processing etc.) into development and production networks?

Please cross the appropriate answer.

			<input checked="" type="radio"/>	
Very low integration level	Low integration level	Medium	High	Very high



HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

Is there a shared data pool?

Please cross the appropriate answer.

Not at all	Exchange on demand (data is processed with order)	Shared master data	Pool with a few particular partners	All data shared in a cloud (access only for network members)
------------	--	--------------------	--	--

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high
----------	-----------	--------	-------------------	-----------

2.8 Legal Framework

Does your product have legal restrictions (regarding ecological, security/safety issues and data protection, privacy issues, intellectual property rights etc.) limiting mass customization?

Please cross the appropriate answer.

No restrictions	A few restrictions	Some restrictions	Many restrictions	Very high restrictions
------------------------	--------------------	-------------------	-------------------	------------------------

Please name the restrictions:

EXCEPT
~~ISO 9001 HUMAN RIGHTS - SAFETY REQUIREMENTS~~
 ISO 9001 QUALITY CONTROL
 OSAH 18001 SAFETY
 SA 8000 ETHICS



HORIZON 2020


FBD_BModel - Questionnaire

FBD_BModel

3 Further Comments Concerning Your Status Quo in Mass customisation and Big Data Aspects

Thank you!!

Business Case Technical Performing Underwear:



FBD_BModel - Questionnaire

HORIZON 2020

FBD_BModel

1 General Information about Your Company

Please enter your company data into the following table:

Name of your company:	KUVERA SPA. / PANAHAY / JERKED
Address:	VIA BOSCOPIANO - INTEROTTO NOLA (NAPOLI)
Industry:	SPORTSWEAR - UNDERWEAR
Main production sites (country / region):	CHINA / BANGLADESH
Products concerning FBD_BModel	TECHNICAL UNDERWEAR - J-TRAINER SEAMLESS SKIN
Customers (please answer if B2C or B2B) And if B2B please name the sector(s)	B2C + B2B (for stores)

2 Mass Customisation and Big Data

2.1 Corporate Culture for Innovative Leadership:

Does your corporate culture supports flexible decision structures?

Please cross the appropriate answer.

Yes ☒

No ☐

Is there a strict hierarchy?

Please cross the appropriate answer.

Yes ☒

No ☐

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			<input checked="" type="checkbox"/>	
Very low	Quite low	Medium	Quite high	Very high

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2.2 Organizational Structure

Does your organizational structure supports flexible handling of activities and to which degree?

Please cross the appropriate answer.

		X		
Very low degree	Low degree	Medium degree	High degree	Very high degree

Is there, in general a strict sequence of activities in the value creation processes (development/production/sales)?

Please cross the appropriate answer.

	X			
All processes are strictly structured	Most of the processes are strictly structured	A few processes are strictly structured	Most of the processes are flexible structured	All of the processes are flexible structured

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			X	
Very low	Quite low	Medium	Quite high	Very high

2.3 IT Landscape

Does your IT Landscape support open interfaces?

Please cross the appropriate answer.

Yes ☒

No ☐

Is there a continuous IT support from development to production?

Please cross the appropriate answer.

		X		
No IT support	The support is highly interrupted	The support is partly existing	The support is to a wide extend implemented	There is a continuous IT support

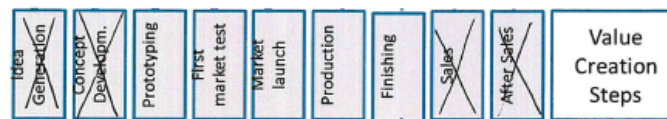


HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

Please cross the value creations steps where IT systems are linked (interoperations)¹.



Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

	<input checked="" type="checkbox"/>			
Very low	Quite low	Medium	Quite high	Very high

2.4 Employees

Overall, are your employees skilled and qualified for flexible decision making in extraordinary situations?

Please cross the appropriate answer.

	<input checked="" type="checkbox"/>			
Not at all	Only a few	Most of them	The majority	All of them

Are employees available to work in a flexible production (being multi-skilled)?

Please cross the appropriate answer.

	<input checked="" type="checkbox"/>			
Not at all	Only a few	Most of them	The majority	All of them

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

		<input checked="" type="checkbox"/>		
Very low	Quite low	Medium	Quite high	Very high

¹ Reichwald / Piller (2009) Interaktive Wertschöpfung, Open Innovation, Individualisierung und neue Formen der Arbeitsteilung 2., vollständig überarbeitete und erweiterte Auflage



HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

2.5 Customer Integration

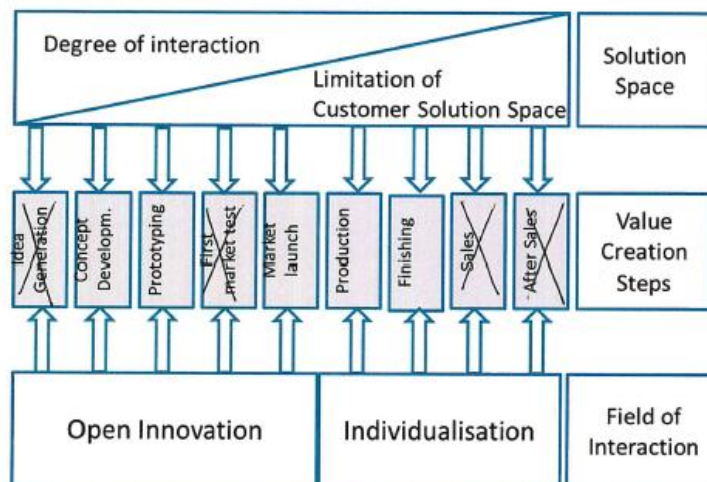
* NOTE : WE ARE SPEAKING ABOUT STORES CUSTOMERS

How deep are the customers integrated into your development and production processes?

Please cross the appropriate answer.

				X
Not at all	Only a bit	Quite well	Very well	Totally

Please, cross in the following figure the value creation step (marked in grey) to which the customer is allowed to interact with your development/production process?



Please, cross in the following table how is the integration into the value creation step of the customer:

Personal (face to face)	X
Via (traditional) communication means (phone, fax, email)	X
Digital integrated via platform (e.g. company platform)	
Direct integrated in process systems (e.g. ERP)	
Other, please specify below	



FBD_BModel - Questionnaire

FBD_BModel

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			<input checked="" type="checkbox"/>	
Very low	Quite low	Medium	Quite high	Very high

2.6 Access to Temporarily Needed Assets and Resources

How good is your access to additionally needed assets (production resources, products, services, manpower etc.) during the development and production processes?

Please cross the appropriate answer.

		<input checked="" type="checkbox"/>		
Very difficult	Quite difficult	It depends	Quite well	Very good

Is it difficult to integrate additional required assets to the processes?

Please cross the appropriate answer.

	<input checked="" type="checkbox"/>			
Not at all	Only a bit	Quite well	Very well	Totally

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			<input checked="" type="checkbox"/>	
Very low	Quite low	Medium	Quite high	Very high

2.7 Network Integration

How good is the integration (concerning planning, trust, legal issues, data exchange, seamless data processing etc.) into development and production networks?

Please cross the appropriate answer.

<input checked="" type="checkbox"/>				
Very low integration level	Low integration level	Medium	High	Very high



FBD_BModel - Questionnaire

FBD_BModel

Is there a shared data pool?

Please cross the appropriate answer.

<input checked="" type="checkbox"/>				
Not at all	Exchange on demand (date is processed with order)	Shared master data	Pool with a few particular partners	All data shared in a cloud (access only for network members)

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			<input checked="" type="checkbox"/>	
Very low	Quite low	Medium	Quite high	Very high

2.8 Legal Framework

Does your product have legal restrictions (regarding ecological, security/safety issues and data protection, privacy issues, intellectual property rights etc.) limiting mass customization?

Please cross the appropriate answer.

	<input checked="" type="checkbox"/>			
No restrictions	A few restrictions	Some restrictions	Many restrictions	Very high restrictions

Please name the restrictions:

PRIVACY DATA, REACH TEST STANDARD FOR THE MATERIALS



FBD_BModel - Questionnaire


FBD_BModel

3 Further Comments Concerning Your Status Quo in Mass customisation and Big Data Aspects

We have 2 kind of customers : ① end consumer,
② stores mono-brand. So for these 2 kind of customer
we can have 2 road for the customizationelles :
- about stores we can have B2B
- about end consumer we can have B2C

Thank you!!

Business Case Men's Fashion Urban Wear and Performing Clothing:



FBD_BModel - Questionnaire

FBD_BModel

HORIZON 2020

1 General Information about Your Company

Please enter your company data into the following table:

Name of your company:	BESTE
Address:	VIA PRIMO LEVI, 6 CANTAGALHO (PO)
Industry:	TEXTILE - GARMENT PRODUCER
Main production sites (country / region):	ITALY
Products concerning FBD_BModel	PERFORMING GARMENT FOR MEN
Customers (please answer if B2C or B2B) And if B2B please name the sector(s)	BOTH

2 Mass Customisation and Big Data

2.1 Corporate Culture for Innovative Leadership:

Does your corporate culture supports flexible decision structures?

Please cross the appropriate answer.

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>

Is there a strict hierarchy?

Please cross the appropriate answer.

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high
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HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

2.2 Organizational Structure

Does your organizational structure supports flexible handling of activities and to which degree?

Please cross the appropriate answer.

Very low degree	Low degree	Medium degree	High degree	Very high degree

Is there, in general a strict sequence of activities in the value creation processes (development/production/sales)?

Please cross the appropriate answer.

All processes are strictly structured	Most of the processes are strictly structured	A few processes are strictly structured	Most of the processes are flexible structured	All of the processes are flexible structured

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

2.3 IT Landscape

Does your IT Landscape support open interfaces?

Please cross the appropriate answer.

Yes ☐

No ☒

Is there a continuous IT support from development to production?

Please cross the appropriate answer.

No IT support	The support is highly interrupted	The support is partly existing	The support is to a wide extend implemented	There is a continuous IT support



FBD_BModel - Questionnaire

FBD_BModel

Please cross the value creations steps where IT systems are linked (interoperations)¹.



Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

2.4 Employees

Overall, are your employees skilled and qualified for flexible decision making in extraordinary situations?

Please cross the appropriate answer.

Not at all	Only a few	Most of them	The majority	All of them

Are employees available to work in a flexible production (being multi-skilled)?

Please cross the appropriate answer.

Not at all	Only a few	Most of them	The majority	All of them

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

¹ Reichwald / Piller (2009) Interaktive Wertschöpfung, Open Innovation, Individualisierung und neue Formen der Arbeitsteilung 2., vollständig überarbeitete und erweiterte Auflage





FBD_BModel - Questionnaire

FBD_BModel

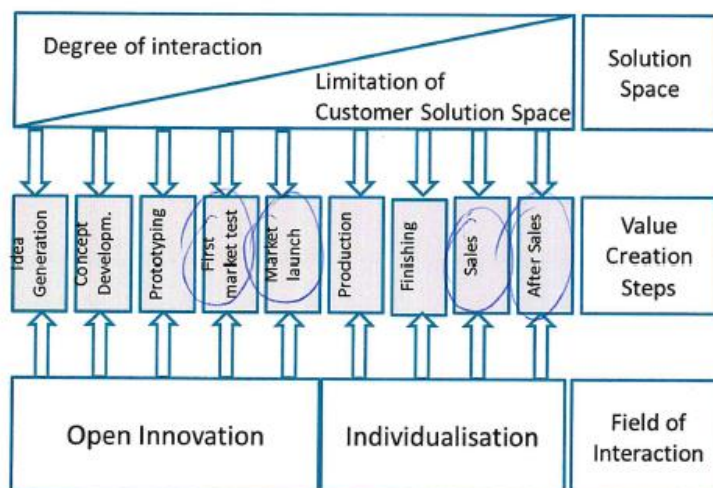
2.5 Customer Integration

How deep are the customers integrated into your development and production processes?

Please cross the appropriate answer.

Not at all	Only a bit	Quite well	Very well	Totally

Please, cross in the following figure the value creation step (marked in grey) to which the customer is allowed to interact with your development/production process?



Please, cross in the following table how is the integration into the value creation step of the customer:

Personal (face to face)	
Via (traditional) communication means (phone, fax, email)	
Digital integrated via platform (e.g. company platform)	<input checked="" type="checkbox"/>
Direct integrated in process systems (e.g. ERP)	
Other, please specify below	



HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

2.6 Access to Temporarily Needed Assets and Resources

How good is your access to additionally needed assets (production resources, products, services, manpower etc.) during the development and production processes?

Please cross the appropriate answer.

Very difficult	Quite difficult	It depends	Quite well	Very good

Is it difficult to integrate additional required assets to the processes?

Please cross the appropriate answer.

Not at all	Only a bit	Quite well	Very well	Totally

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high

2.7 Network Integration


How good is the integration (concerning planning, trust, legal issues, data exchange, seamless data processing etc.) into development and production networks?

Please cross the appropriate answer.

Very low integration level	Low integration level	Medium	High	Very high






 HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

Is there a shared data pool?
Please cross the appropriate answer.

Not at all	Exchange on demand (date is processed with order)	Shared master data	Pool with a few particular partners	All data shared in a cloud (access only for network members)
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Concerning your answers, please give a rate of the soundness of data.
Please cross the appropriate answer.

Very low	Quite low	Medium	Quite high	Very high
----------	-----------	--------	------------	-----------

2.8 Legal Framework

Does your product have legal restrictions (regarding ecological, security/safety issues and data protection, privacy issues, intellectual property rights etc.) limiting mass customization?
Please cross the appropriate answer.


No restrictions	A few restrictions	Some restrictions	Many restrictions	Very high restrictions
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Please name the restrictions:

PRIVACY ISSUES, REGARDING ECOLOGICAL

761122 — FBD_BModel

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HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

3 Further Comments Concerning Your Status Quo in Mass customisation and Big Data Aspects

WE HAVE DIFFERENT STRATEGIES FOR B2B AND B2C.


Thank you!!

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Business Case Customized Performing and Fashion Accessories:


 HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

1 General Information about Your Company

Please enter your company data into the following table:

Name of your company:	KUVERA S.p.A. / BRAND CARPISA
Address:	VIA BOSCO FALGOME - INTERPOMO DI NOVA (NA)
Industry:	UNDERWEAR, BAGS, ACCESSORIES, LUGGAGE
Main production sites (country / region):	CHINA / SHANGHAI AREA
Products concerning FBD_BModel	BACKPACK
Customers (please answer if B2C or B2B) And if B2B please name the sector(s)	B2C + B2B (FOR THE STORES).

2 Mass Customisation and Big Data

2.1 Corporate Culture for Innovative Leadership:

Does your corporate culture supports flexible decision structures?
Please cross the appropriate answer.

Yes ☒ No ☐

Is there a strict hierarchy?
Please cross the appropriate answer.

Yes ☒ No ☐

Concerning your answers, please give a rate of the soundness of data.
Please cross the appropriate answer.

			<input checked="" type="checkbox"/>	
Very low	Quite low	Medium	<u>Quite high</u>	Very high

761122 — FBD_BModel

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FBD_BModel - Questionnaire

FBD_BModel

2.2 Organizational Structure

Does your organizational structure supports flexible handling of activities and to which degree?

Please cross the appropriate answer.

		X		
Very low degree	Low degree	Medium degree	High degree	Very high degree

Is there, in general a strict sequence of activities in the value creation processes (development/production/sales)?

Please cross the appropriate answer.

	X			
All processes are strictly structured	Most of the processes are strictly structured	A few processes are strictly structured	Most of the processes are flexible structured	All of the processes are flexible structured

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			X	
Very low	Quite low	Medium	Quite high	Very high

2.3 IT Landscape

Does your IT Landscape support open interfaces?

Please cross the appropriate answer.

Yes ☒

No ☐

Is there a continuous IT support from development to production?

Please cross the appropriate answer.

		X		
No IT support	The support is highly interrupted	The support is partly existing	The support is to a wide extend implemented	There is a continuous IT support



FBD_BModel - Questionnaire

FBD_BModel

Please cross the value creations steps where IT systems are linked (interoperations)¹.



Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

	<input checked="" type="checkbox"/>			
Very low	Quite low	Medium	Quite high	Very high

2.4 Employees

Overall, are your employees skilled and qualified for flexible decision making in extraordinary situations?

Please cross the appropriate answer.

	<input checked="" type="checkbox"/>			
Not at all	Only a few	Most of them	The majority	All of them

Are employees available to work in a flexible production (being multi-skilled)?

Please cross the appropriate answer.

	<input checked="" type="checkbox"/>			
Not at all	Only a few	Most of them	The majority	All of them

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

		<input checked="" type="checkbox"/>		
Very low	Quite low	Medium	Quite high	Very high

¹ Reichwald / Piller (2009) Interaktive Wertschöpfung, Open Innovation, Individualisierung und neue Formen der Arbeitsteilung 2., vollständig überarbeitete und erweiterte Auflage



FBD_BModel - Questionnaire

FBD_BModel

* NOTE : WE ARE SPEAKING ABOUT STORES CUSTOMER

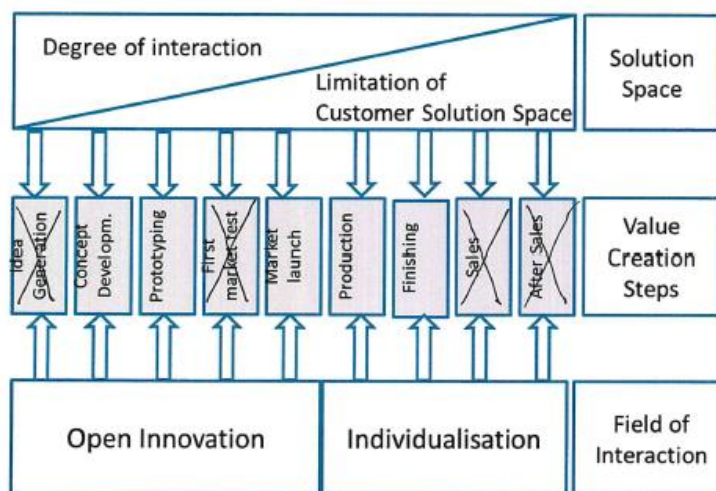
2.5 Customer Integration

How deep are the customers integrated into your development and production processes?

Please cross the appropriate answer.

				<input checked="" type="checkbox"/>
Not at all	Only a bit	Quite well	Very well	Totally

Please, cross in the following figure the value creation step (marked in grey) to which the customer is allowed to interact with your development/production process?



Please, cross in the following table how is the integration into the value creation step of the customer:

Personal (face to face)	<input checked="" type="checkbox"/>
Via (traditional) communication means (phone, fax, email)	<input checked="" type="checkbox"/>
Digital integrated via platform (e.g. company platform)	<input checked="" type="checkbox"/>
Direct integrated in process systems (e.g. ERP)	
Other, please specify below	

* END CONSUMER.
FOR CUSTOMIZE
OF WARDROBE



HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			X	
Very low	Quite low	Medium	Quite high	Very high

2.6 Access to Temporarily Needed Assets and Resources

How good is your access to additionally needed assets (production resources, products, services, manpower etc.) during the development and production processes?

Please cross the appropriate answer.

		X		
Very difficult	Quite difficult	It depends	Quite well	Very good

Is it difficult to integrate additional required assets to the processes?

Please cross the appropriate answer.

	X			
Not at all	Only a bit	Quite well	Very well	Totally

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			X	
Very low	Quite low	Medium	Quite high	Very high

2.7 Network Integration

How good is the integration (concerning planning, trust, legal issues, data exchange, seamless data processing etc.) into development and production networks?

Please cross the appropriate answer.

X				
Very low integration level	Low integration level	Medium	High	Very high



HORIZON 2020

FBD_BModel - Questionnaire

FBD_BModel

Is there a shared data pool?

Please cross the appropriate answer.

	X			
Not at all	Exchange on demand (date is processed with order)	Shared master data	Pool with a few particular partners	All data shared in a cloud (access only for network members)

Concerning your answers, please give a rate of the soundness of data.

Please cross the appropriate answer.

			X	
Very low	Quite low	Medium	Quite high	Very high

2.8 Legal Framework

Does your product have legal restrictions (regarding ecological, security/safety issues and data protection, privacy issues, intellectual property rights etc.) limiting mass customization?

Please cross the appropriate answer.

	X			
No restrictions	A few restrictions	Some restrictions	Many restrictions	Very high restrictions

Please name the restrictions:

PRIVACY DATA, REACH TEST STANDARD FOR THE MATERIALS.





FBD_BModel - Questionnaire

FBD_BModel

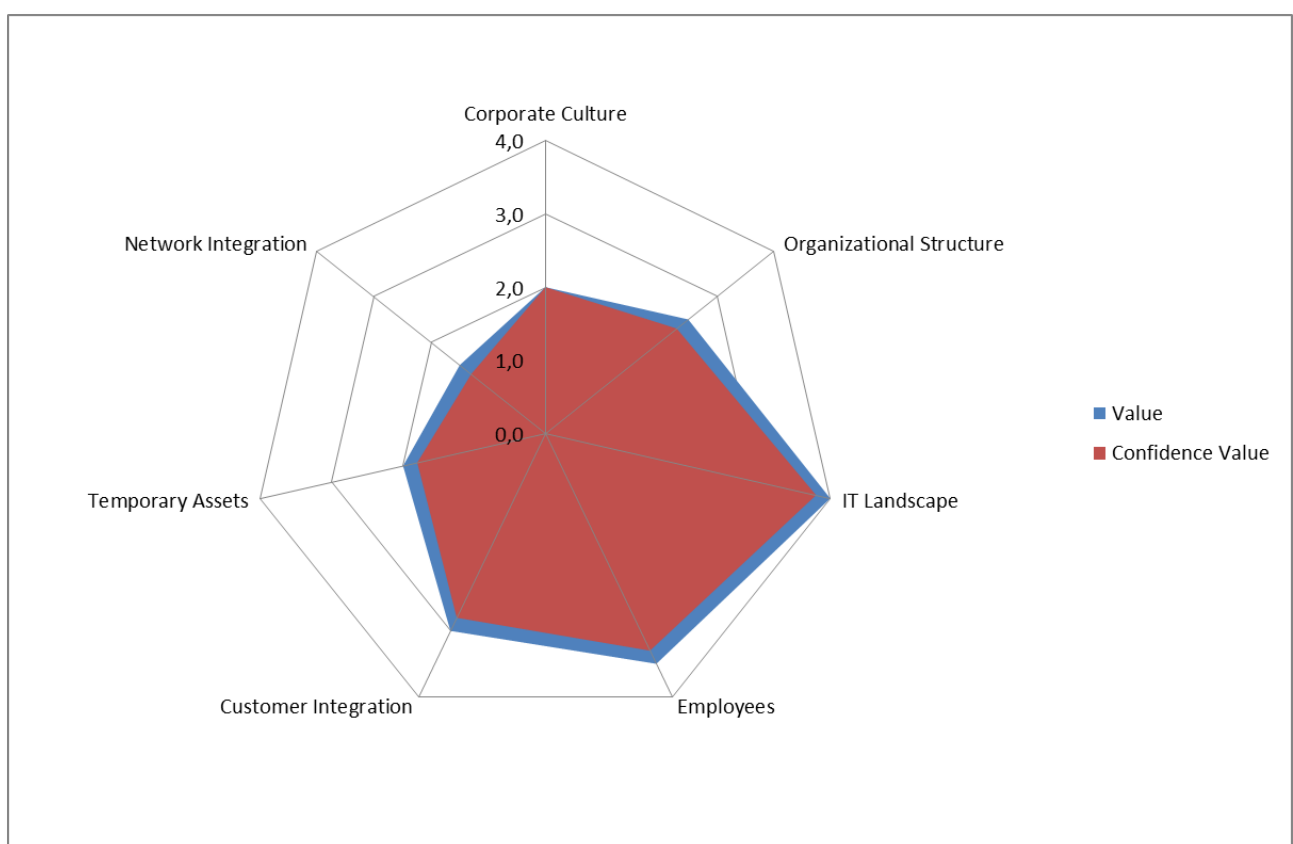
3 Further Comments Concerning Your Status Quo in Mass customisation and Big Data Aspects

WE HAVE 2 KIND OF CUSTOMER: ① END CONSUMER,
② STORES MOMO BRAND. SO FOR THESE 2 KIND OF CUSTOMER
WE CAN HAVE 2 ROAD FOR THE CUSTOMIZATION RIVES.
ABOUT STORES WE CAN HAVE B2B
ABOUT END CONSUMER WE CAN HAVE B2C.

Thank you!!

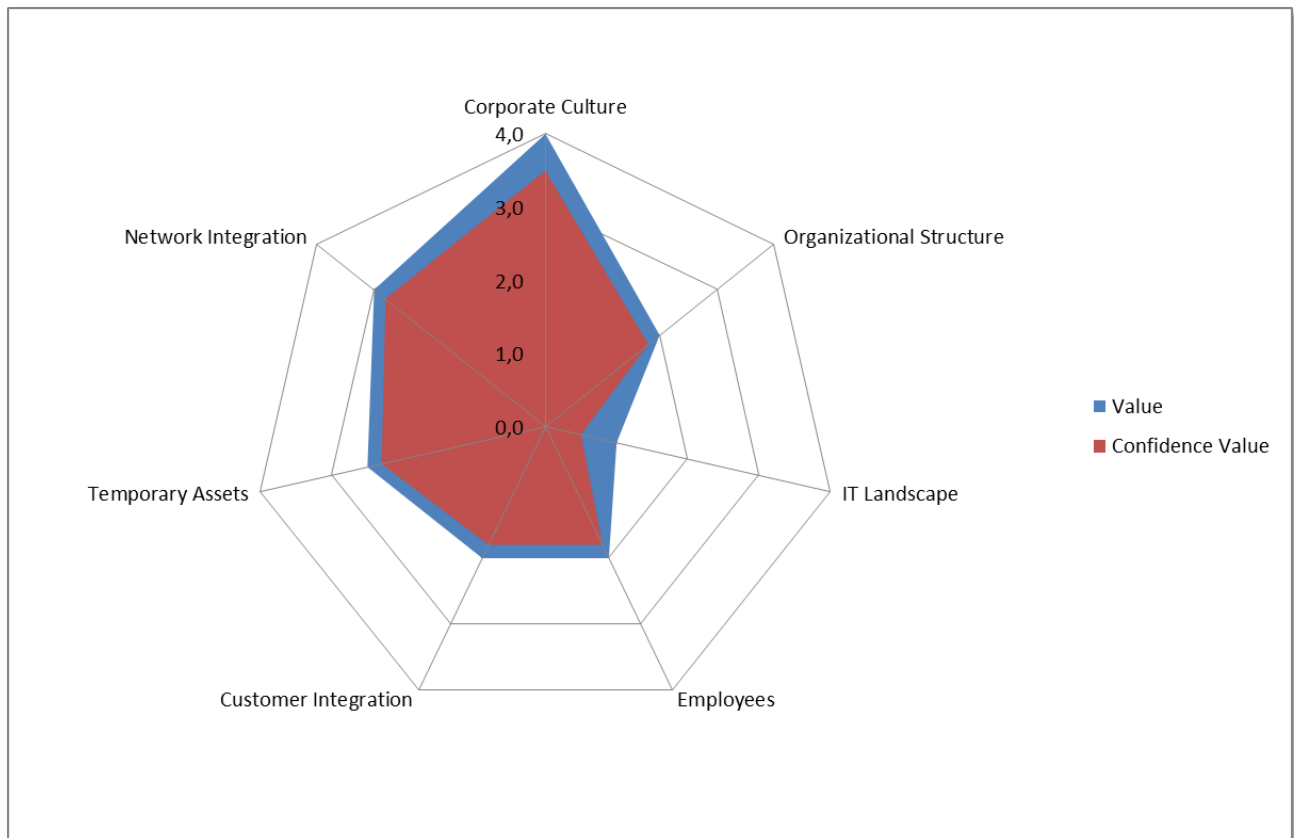
ANNEX 2 – The Results of the Questionnaires – Radar Charts

Radar Chart of Business Case 1 - Bivolino:



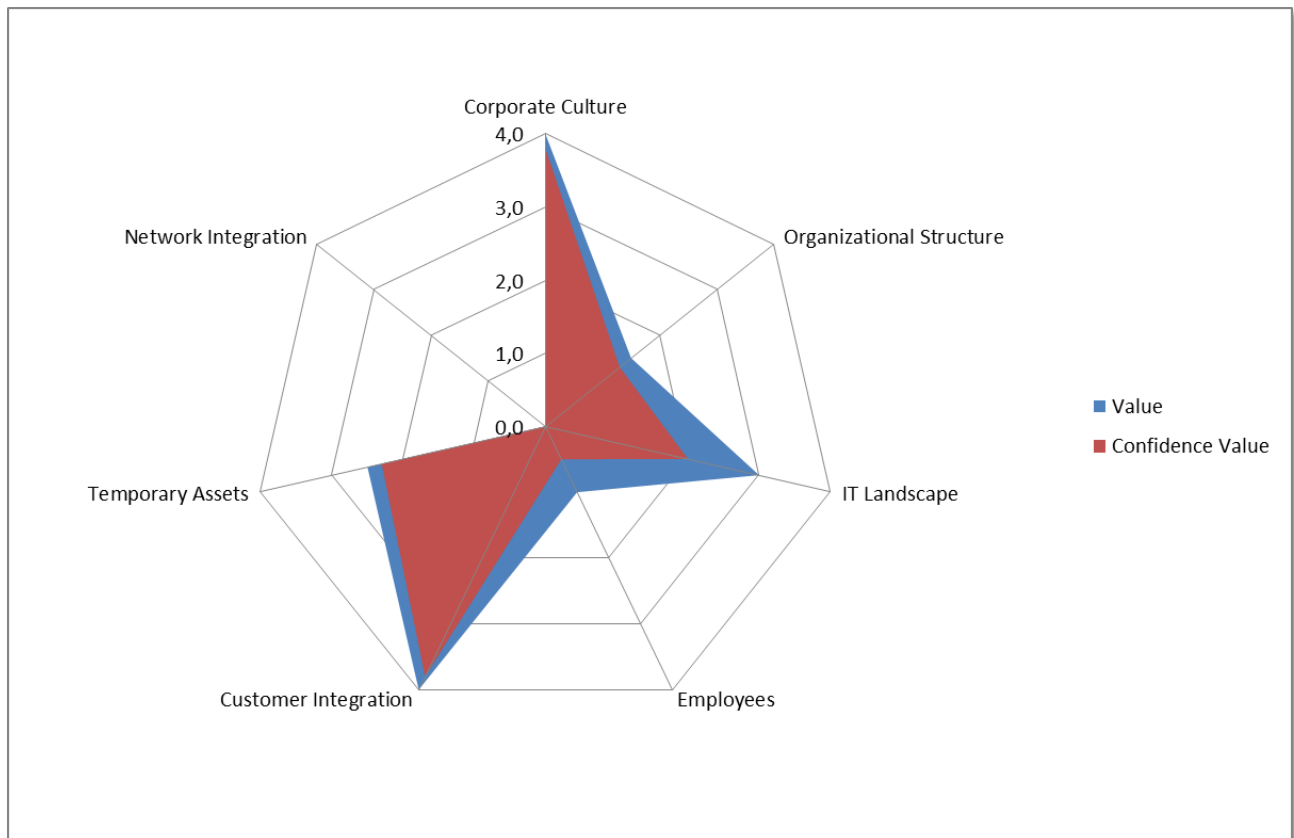
Aspect	Value	Confidence Value
Corporate Culture	2,0	2,0
Organizational Structure	2,5	2,3
IT Landscape	4,0	3,8
Employees	3,5	3,3
Customer Integration	3,0	2,8
Temporary Assets	2,0	1,8
Network Integration	1,5	1,3

Radar Chart of Business Case 2 - Azadora:



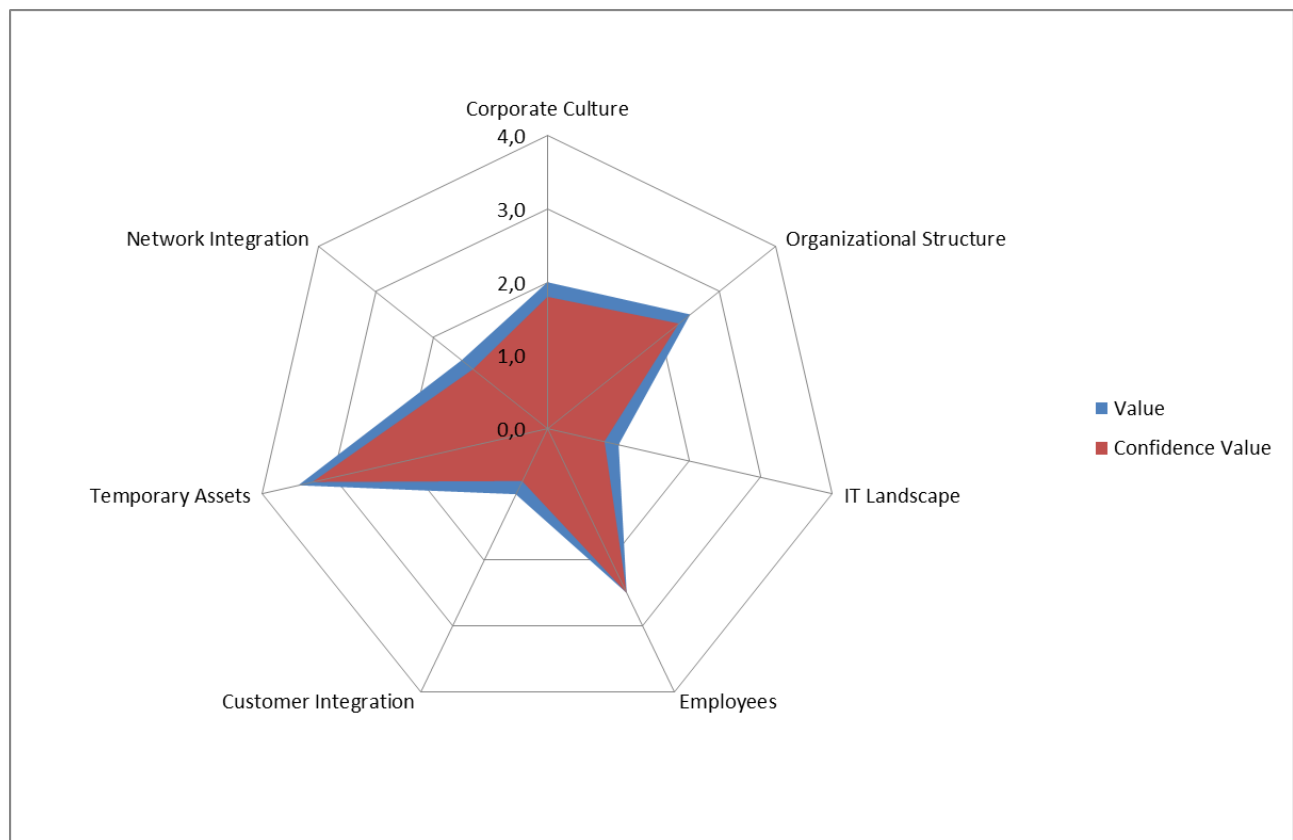
Aspect	Value	Confidence Value
Corporate Culture	4,0	3,5
Organizational Structure	2,0	1,8
IT Landscape	1,0	0,5
Employees	2,0	1,8
Customer Integration	2,0	1,8
Temporary Assets	2,5	2,3
Network Integration	3,0	2,8

Radar Chart of Business Case 3 – Kuvera Yamamay/Jaked:



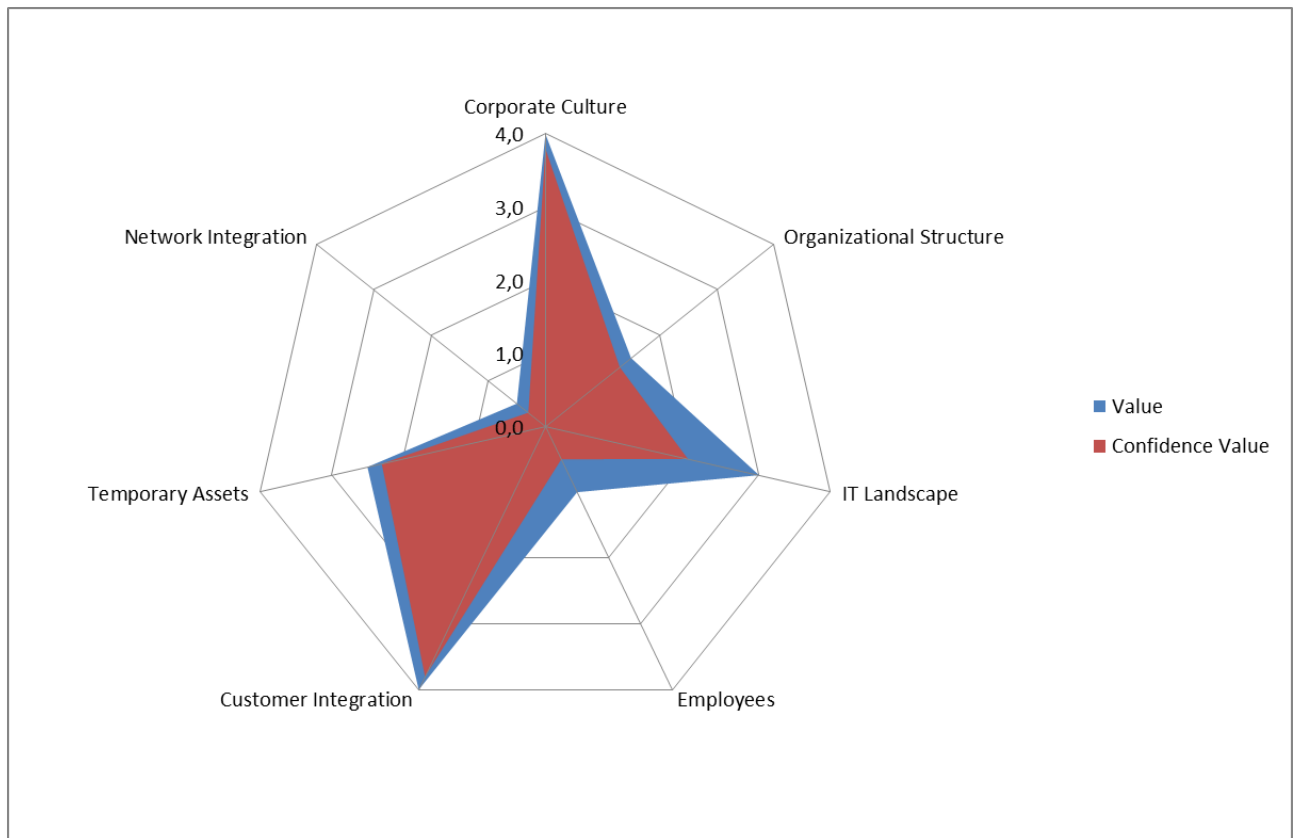
Aspec	Value	Confidence Value
Corporate Culture	4,0	3,8
Organizational Structure	1,5	1,3
IT Landscape	3,0	2,0
Employees	1,0	0,5
Customer Integration	4,0	3,8
Temporary Assets	2,5	2,3
Network Integration	0,0	0,0

Radar Chart of Business Case 4 – Beste Monobi:



Aspect	Value	Confidence Value
Corporate Culture	2,0	1,8
Organizational Structure	2,5	2,3
IT Landscape	1,0	0,8
Employees	2,5	2,5
Customer Integration	1,0	0,8
Temporary Assets	3,5	3,3
Network Integration	1,5	1,3

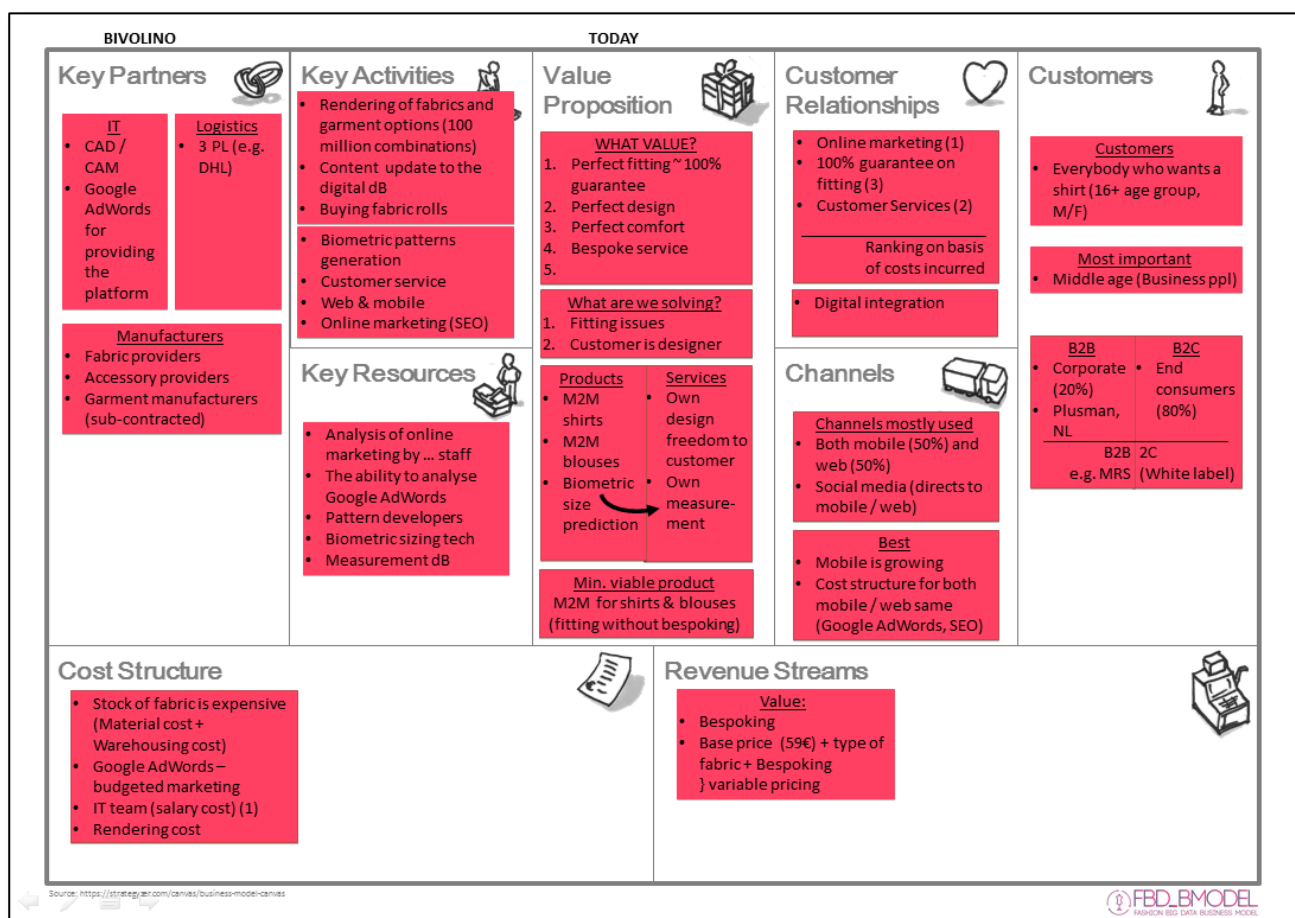
Radar Chart of Business Case 5 – Kuvera Carpisa:



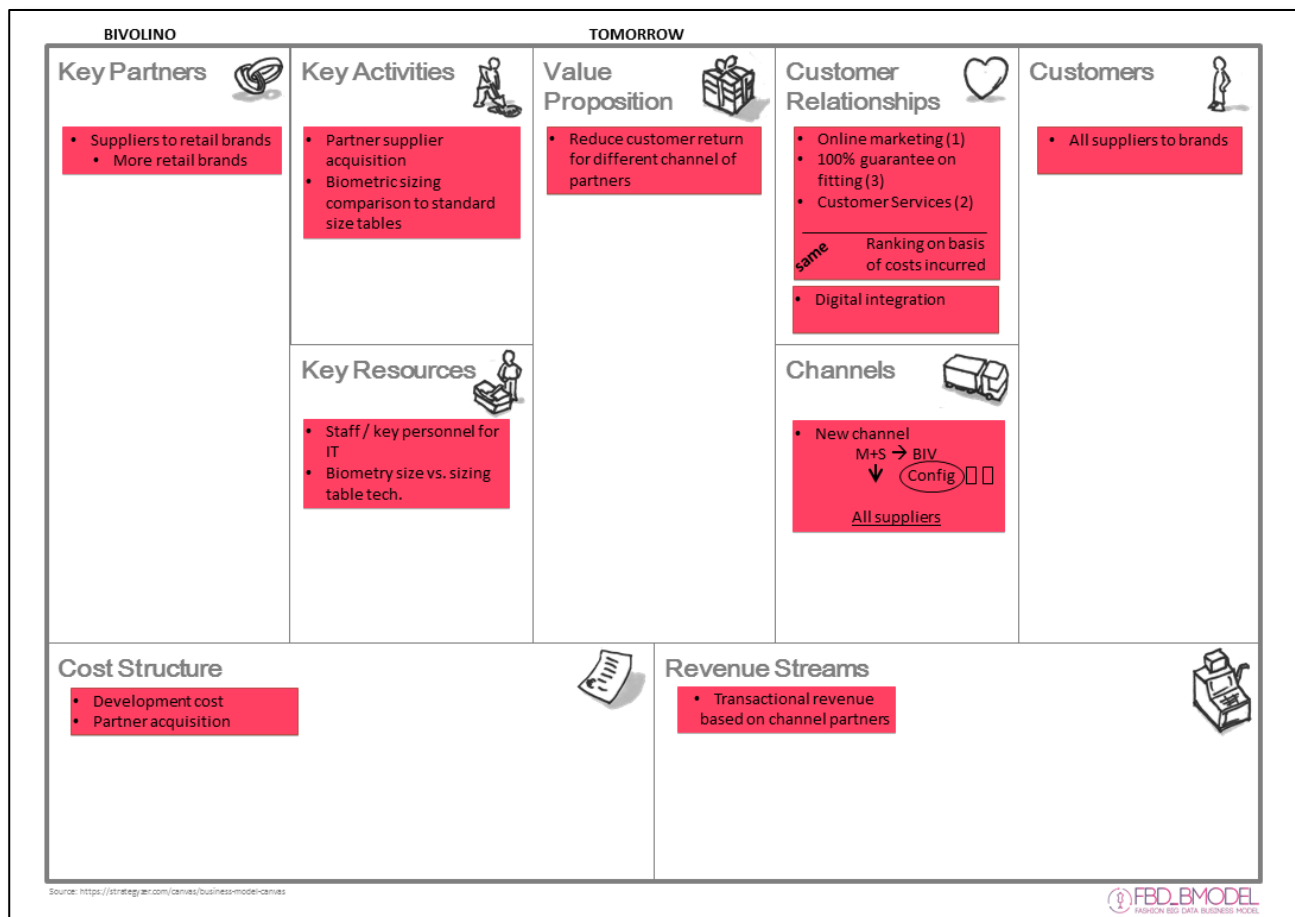
Aspect	Value	Confidence Value
Corporate Culture	4,0	3,8
Organizational Structure	1,5	1,3
IT Landscape	3,0	2,0
Employees	1,0	0,5
Customer Integration	4,0	3,8
Temporary Assets	2,5	2,3
Network Integration	0,5	0,3

ANNEX 3 – The Business Model Canvas of Business Cases

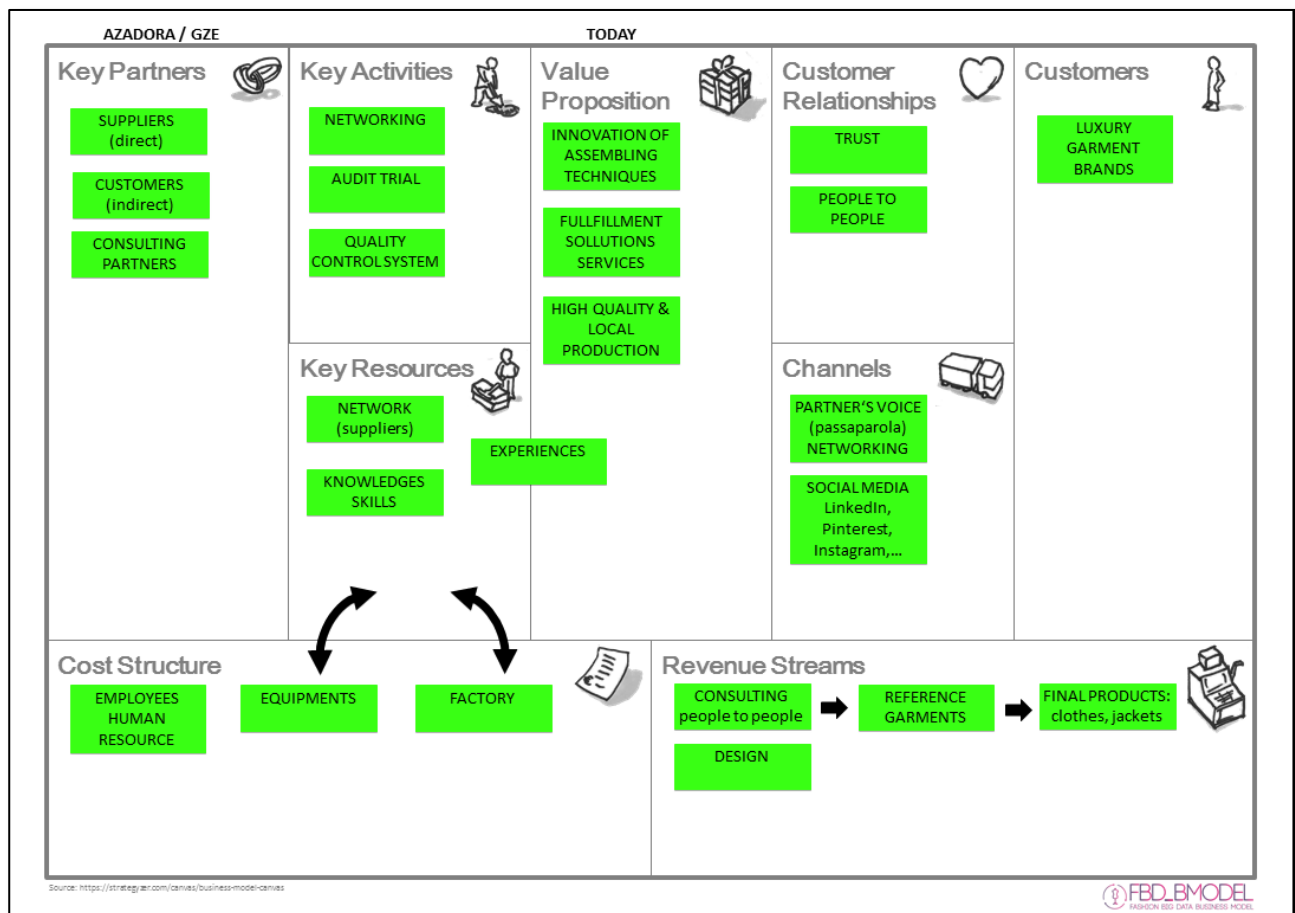
Business Model Canvas of Business Case 1 – Current State:



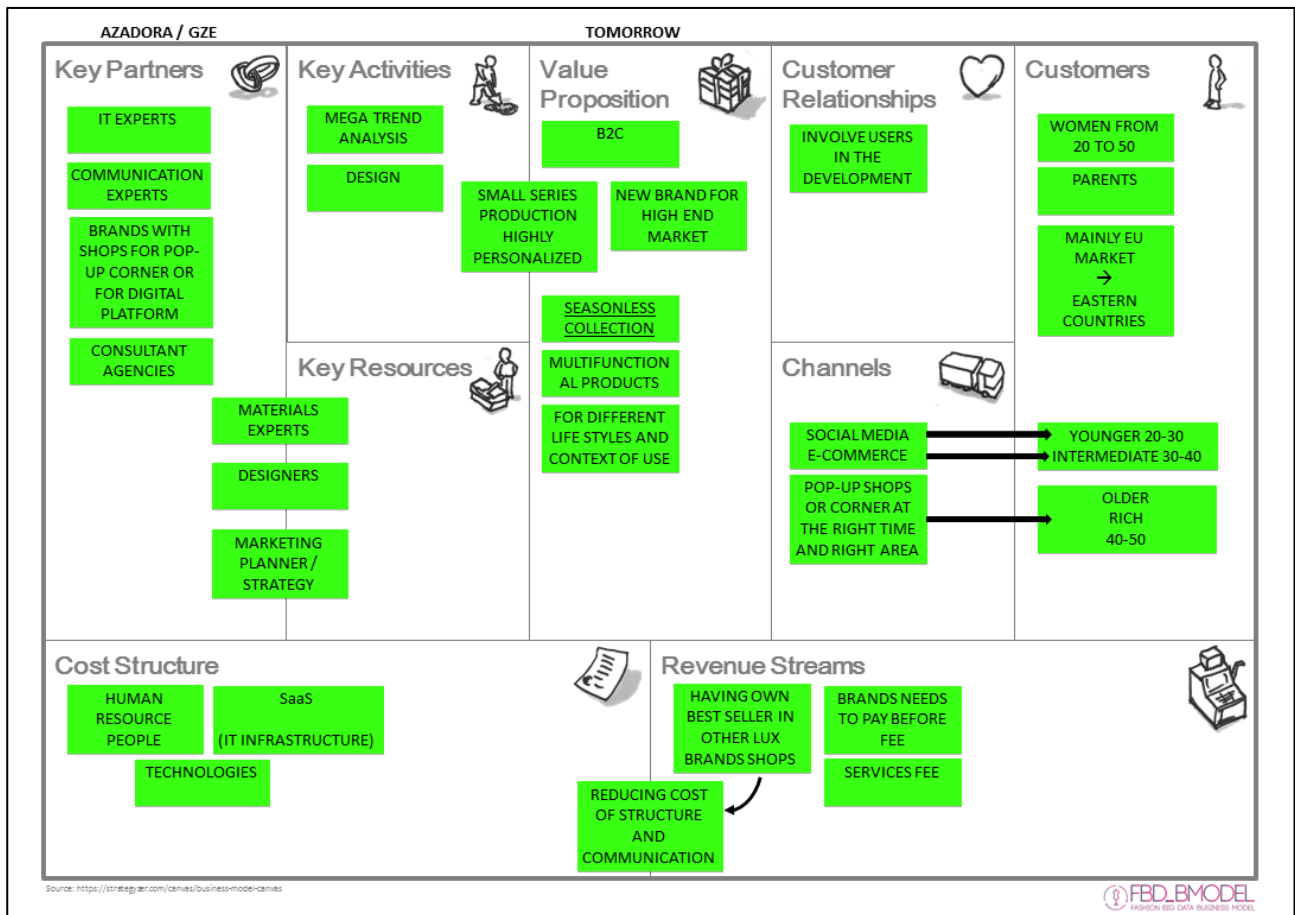
Business Model Canvas of Business Case 1 – Future Business Model:



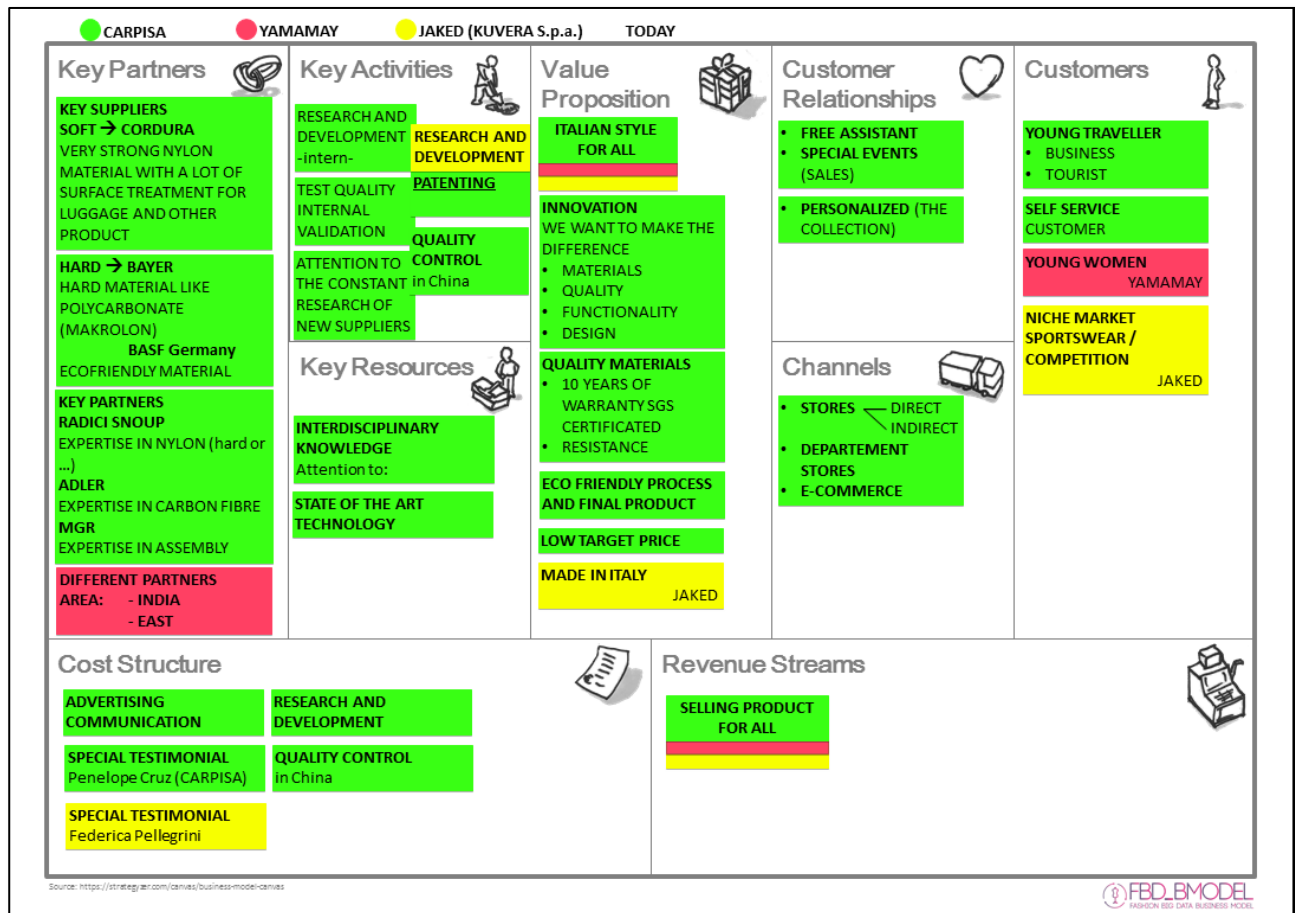
Business Model Canvas of Business Case 2 – Current State



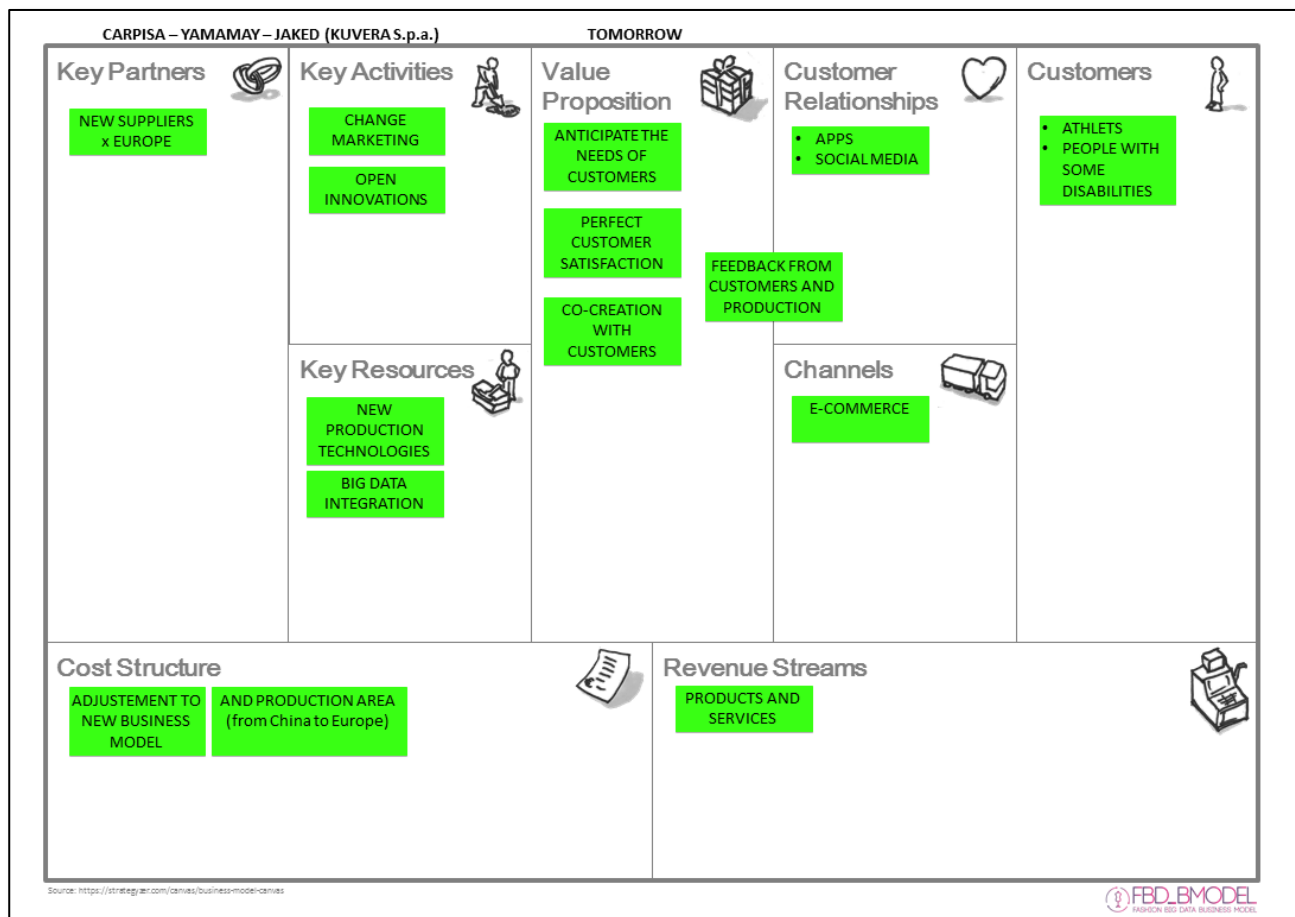
Business Model Canvas of Business Case 2 – Future Business Model



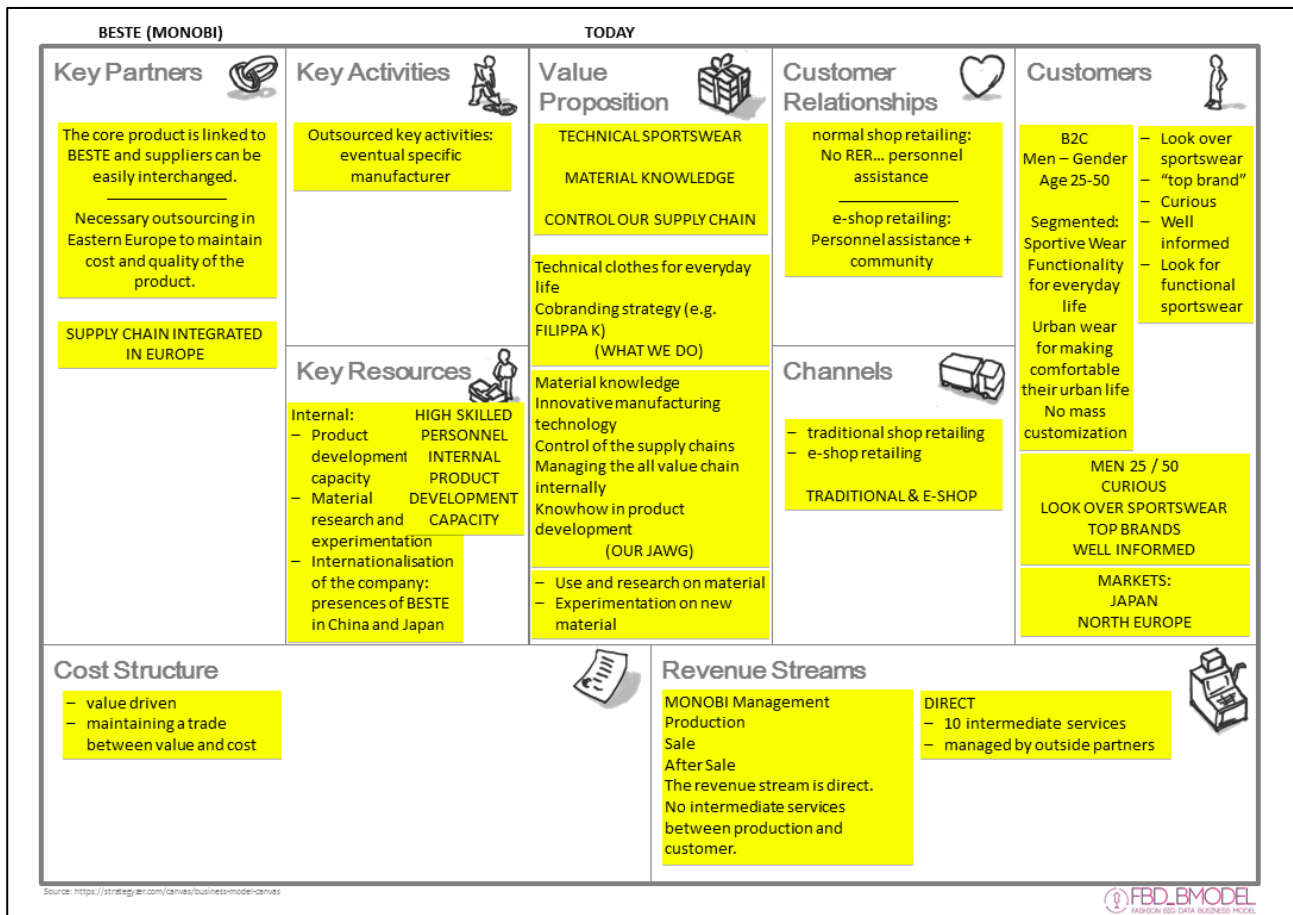
Business Model Canvas of Business Case 3 and 5 – Current State



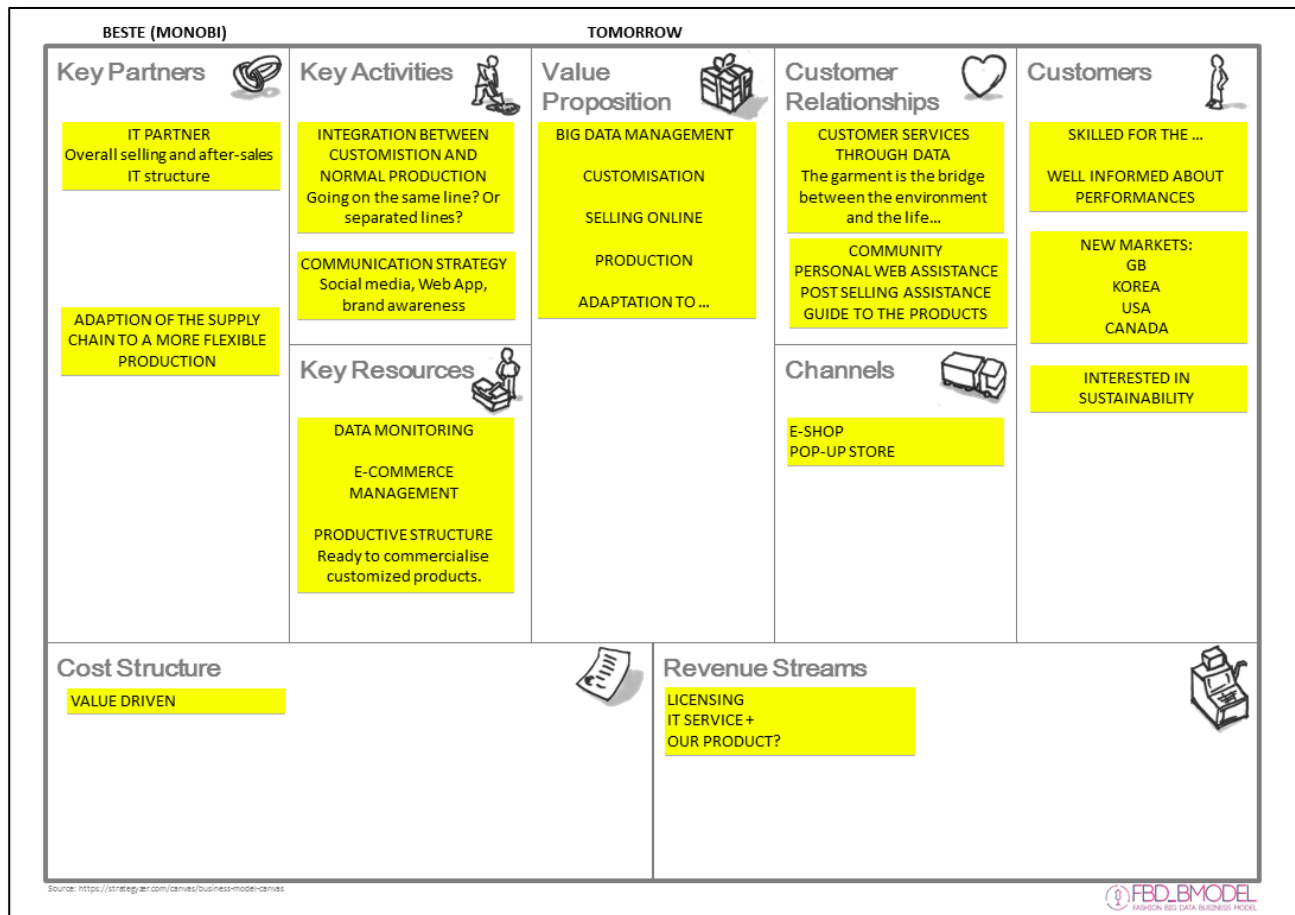
Business Model Canvas of Business Case 3 and 5 – Future Business Model



Business Model Canvas of Business Case 4 – Current State



Business Model Canvas of Business Case 4 – Future Business Model



Literature and References

- [1] Barbian, M. et al. (2016), Geschäftsmodelle für Industrie 4.0 – Digitale Chancen und Bedrohungen, VDI-Statusreport, Mai 2016, URL: https://www.vdi.de/fileadmin/user_upload/2016-08-10_VDI-GMA_Statusreport-Digitale-Chancen_Geschaeftsmodelle-fuer-l40.pdf, called in April 2017
- [2] Bieger, T., zu Knyphausen-Aufseß, D. and Krys, C. (2011), Innovative Geschäftsmodelle – Konzeptionelle Grundlagen, Gestaltungsfelder und unternehmerische Praxis, Heidelberg et al., 2011
- [3] Fogliatto, F.S., Silveira, G.J.S. and Borenstein, D. (2012), The mass customization decade: An updated review of the literature, in: International Journal of Production Economics, Vol 138, No. 1, 2012, p. 14-25
- [4] Fuchs, M. (2014), Mass Customization und Open Innovation – Anwendung und Bedeutung in Unternehmen der deutschen Bekleidungswirtschaft, Bericht der Hochschule für Technik und Wirtschaft Berlin, URL: <https://opus4.kobv.de/opus4-htw/frontdoor/index/index/docId/268>, called in April 2018
- [5] Gassmann, O., Frankenberger, K. and Csik, M. (2013) Geschäftsmodelle entwickeln – 55 innovative Konzepte mit dem St. Galler Business Model Navigator, München, 2013
- [6] Hankammer, S., Nielsen, K., Piller, F.T., Schuh, G., and Wang, N. (Eds., 2018), Customization 4.0 – Proceedings of the 9th World Mass Customization & Personalization Conference (MCPC 2017), Aachen, Germany, November 20th-21st, 2017
- [7] Kaluza, B., Friedrich, G., Kreutler, G., Abdelkafi, N. and Blecker, T. (2005), Information and Management Systems for Product Customization, Boston, 2005
- [8] Moeslein, K. and Koelling M., (2007), Interaktive hybride Wertschöpfung als Innovationsstrategie, in: Streich, D. und Wahl, D. (2007), Innovationsfähigkeit in einer modernen Arbeitswelt: Personalentwicklung – Organisationsentwicklung – Kompetenzentwicklung, Frankfurt und New York, 2007, p. 195-202
- [9] Nagl, A. and Bozem, K. (2018), Geschäftsmodelle 4.0 –Business Model Building mit Checklisten und Fallbeispielen, Wiesbaden, 2018
- [10] Osterwalder, A. and Pigneur, Y. (2010), Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers, Hoboken, 2010
- [11] Piller, F.P. (2006), Mass Customization – Ein wettbewerbsstrategisches Konzept im Informationszeitalter, 4. Auflage, Wiesbaden, 2006
- [12] Rentmeister, J. and Klein S. (2003), Geschäftsmodelle – ein Modebegriff auf der Waagschale, in: Zeitschrift für Betriebswirtschaft, 2003, Special Issue 1, p. 17-30
- [13] Reichwald, R. and Piller, F. (2009), Interaktive Wertschöpfung – Open Innovation, Individualisierung und neue Formen der Arbeitsteilung, Wiesbaden, 2009
- [14] Schmidt, A. (2015), Überlegene Geschäftsmodelle – Wertegenese und Wertschöpfung in turbulenten Umwelten, Wiesbaden, 2015

- [15] Teichner, I. (2012), Organisation der kundenindividuellen Massenproduktion, Aachen, 2012