

BM.4

Generate business model concepts at the big picture level

Complex activity

The aim of this activity is to generate a number of business model concepts at the 'big picture' level.



INPUTS

- New business strategy from the activity *ST.14 Pitch the new business strategy to the CEO.*
- Results of In-Depth Assessment from the activities *BM.2 Gather additional data on the business model* and *BM.3 Gather additional data on operational performance.*
- Ideas for individual building blocks - if taking a 'Bottom-up' approach from the step *Generating ideas at the individual building block level.*

OUTPUTS

- At least three alternative business model concepts. This output is used in the activity: Throughout the step: *Generating ideas at the individual building block level* – if taking a 'Top-down' approach. Throughout the step: *Evaluate the business model concepts and select one to pitch.*

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The aim of this activity is to develop a number of business model concepts that are internally consistent and help to maximize the environmental, social and economic sustainability of the company.

HOW TO GO ABOUT IT

The starting point for generating ideas depends on the overall approach you are taking - 'Top-down' or 'Bottom-up'. Instructions for both approaches are provided below.

If you are taking a 'Top-down' approach to business model innovation

1. Start by deciding if there any blocks of the current business model canvas that you do not want to change due to particular constraints. For instance, if the company has recently made a large investment in a new production line, they are not likely to want to change that at this point. Alternatively, it could be that the company has a unique strength that is hard to replicate and should therefore be retained in the new business model, such as a strong brand or a competency in mass customization. With the relevant building blocks 'frozen', you can focus on the opportunities for innovation in the remaining building blocks.
2. If you are struggling to generate novel ideas, try introducing some of the 'business model patterns' described in the Background information which can be used as inspiration.
3. Once you have completed one business model repeat the process until you have at least three alternative business model concepts.

If you are taking a 'Bottom-up' approach:

1. You should already have some ideas for operational level innovations that could help to eliminate/enhance a sustainability hotspot. Start by filling in the relevant block of the canvas based on the operational level idea that you have.
2. Try to complete the rest of the canvas in a way that is consistent with the change you have made in the first block.
3. Once you have completed one business model repeat the process until you have at least three alternative business model concepts.

Business Model Canvas

Project _____

Date _____

Version _____

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources		Channels	
Cost Structure			Revenue Streams	

Original template from Osterwalder, A., & Pigneur, Y. (2010). Used during activities

ST.3, BM.2, BM.4 and BM.16

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LEARNING CASE STUDY OF BUSINESS MODEL CANVAS

Key Partners	Key Activities Secure the supply of tuna they need. Good accounting systems	Value Propositions A tuna processing, canning, distribution and sales service for fishermen (i.e. instead of buying fish from the fishermen the Tasty Tuna Company sells services to the fishermen)	Customer Relationships Both sides want to maximize the retail value of the canned fish Encourage the fishermen to adopt more sustainable fishing practices Membership network for fishermen	Customer Segments The fishermen
	Key Resources		Channels A new peer to peer marketing channel as fishermen would recruit other fishermen to participate in the network in order to gain economies of scale benefits	
Cost Structure			Revenue Streams Service fees from fishermen for canning, distribution and sales Annual fee to become part of a member network of fishermen	

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The learning case study provides an example of an alternative business model option for the Tasty Tuna Company. This particular business model option aims to contribute to each of the strategic goals previously defined. Efficient tuna processing, canning, distribution and selling are all key strengths of the company that were considered important to retain in the new business model.

The new business model was inspired by the 'Product as a service' business model pattern – see the Background information. This led to the idea to change value proposition of the company to providing a tuna processing, canning, distribution and sale service for fishermen. Instead of the company paying the fishermen for their tuna, the fishermen would pay the Tasty Tuna Company to process their fish on their behalf. The fishermen could then sell the canned tuna to the retailers themselves or they could pay a higher service fee and allow the Tasty Tuna Company to take care of the marketing, sales and distribution activities. This would offer the fishermen the chance to gain access to the higher profits from selling the finished product rather than just their unprocessed fish.

From the Tasty Tuna Company perspective, changing their target customer segment from retailers to the fishermen could help in a number of ways. In particular, it would change the relationship with the fishermen from one where each side had conflicting aims (e.g. fishermen want to sell their tuna at high price whereas Tasty Tuna wants to buy tuna at low price), to a win-win situation where both sides want to maximize the retail value of the canned fish. There would also be a closer relationship between Tasty Tuna and the fishermen because of the increased interaction required in this type of service compared to the simple sales transaction that occurs between the two parties in the current business model. This stronger

relationship could be used to encourage the fishermen to adopt more sustainable fishing practices if it could be shown that this would lead to greater profitability for the fishermen in the long term.

The scope of 'sustainable fishing practices' might include:

- Adopting pole and line gear instead of purse seine or long line gear.
- Eliminating the use of Fish Aggregation Devices (FADs).
- Only fishing on healthy stocks of tuna.
- Taking measures to reduce discards and fish loss between catch and delivery to the factory.
- Adopting workers' rights policies.

This combination of measures would help to ensure a much more sustainable and secure supply of fish for the Tasty Tuna Company and would address many of the company's sustainability goals. This business model would also avoid the need to compete with rival tuna processors at the fish markets to secure the supply of tuna they need. Finally, by focussing on niche markets that are willing to pay a premium for sustainably sourced fish, the company would hopefully increase profit margins (for Tasty Tuna and the fishermen) and become the market leader in the chosen markets.

Other changes to the business model proposal would be necessary to support this central idea. For example, the tuna processing service would only be offered to fishermen that paid an annual fee to become part of a member network (change to Revenue Streams block). This membership fee would create a further incentive for the fishermen to continue dealing with the Tasty Tuna Company rather than one of its competitors and would provide recurring revenue for the company. This member network could also be the basis for a new peer to

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peer sales channel as fishermen would recruit other fishermen to participate in the network in order to gain economies of scale benefits (change to Channels block). Good accounting systems would be required in order to ensure that the fishermen get paid the correct amount for the tuna that has been processed, distributed and sold by the company (change to Key Activities block).

A final point to note is that this business model is an example of when a radical business model idea results in a change in the business strategy. In this case, the change is that market would be fishermen, rather than the end consumers and retailers/wholesalers that are specific in the new business strategy. This change in strategy would need to be highlighted and approved by the senior management team before proceeding with this business model.



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BACKGROUND INFORMATION

Business model patterns

By analysing a large number of real-life, successful business models it is often possible to identify common patterns (Osterwalder & Pigneur, 2010). These patterns can be used to inspire ideas for business model innovations for your company. Below some business model patterns that are relevant for eco-innovation are provided, along with examples of companies that have implemented those patterns (although it is not possible to say if these companies are 'eco-innovative' without knowing more about how they are embedding sustainability into their business strategy and operational activities).

The first five business model patterns come are based on the principles of the 'Circular Economy'. A Circular Economy is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life (WRAP, 2015). The patterns, shown in Figure 8, were identified from an extensive analysis of more than 120 case studies (Accenture, 2014).

Pattern 1: Circular supplies

Business models that replace the linear approach (take-make-dispose) by circular approaches based on the consumption of renewable, recyclable or biodegradable resource inputs and/or employ closed loop approaches in the manufacturing processes. Circular supplies models are especially relevant for companies dealing with scarce commodities and companies major environmental impacts based on resources consumption (Accenture, 2014).

Business Models

Circular Supplies

Resource Recovery

Product Life Extension

Sharing Platforms

Product as a Service

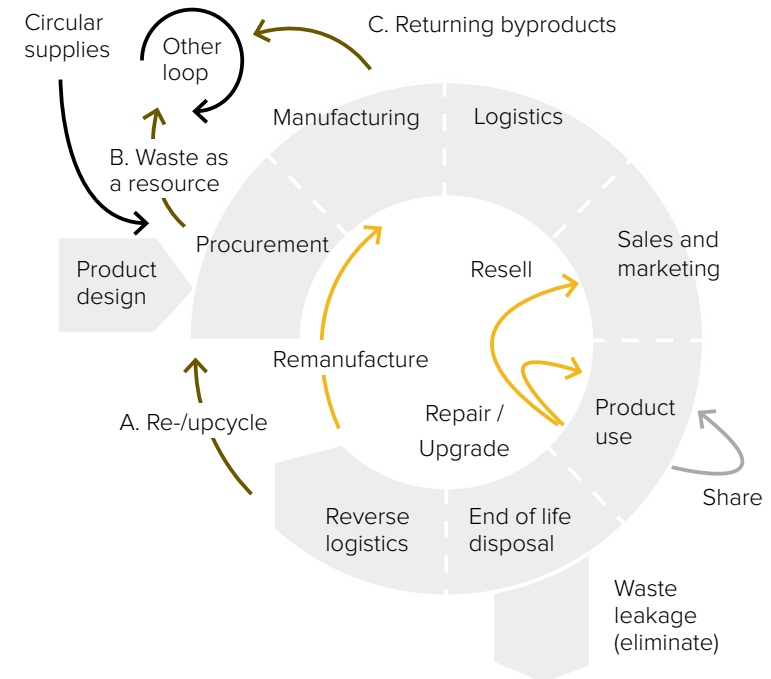


Figure 8: Examples of business model patterns based on Circular Economy principles (Accenture, 2014).

Example: Ghana Bamboo Bikes (Sustainia, 2015)

The bikes currently available in Ghana are often of poor quality and unsuitable for local needs. In response, this solution empowers people in rural areas with the technology they need to make durable

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bikes out of Ghana's abundant bamboo resources. Communities manufacture affordable bicycles and frames, providing employment where few economic opportunities are available. The bicycles are then sold both locally and abroad. The bikes can withstand rough terrain and inclement weather, and are designed to allow for local maintenance and repairs. Moreover, the design can easily be modified to accommodate different needs, such as carrying farm loads, passengers, water, or health workers' kits.

Main sustainability benefits:

- **Environmental:** Bamboo is a more sustainable material than traditional bike materials. Bamboo bike production waste is used to manufacture charcoal briquettes to reduce indoor air pollution and conserve forests.
- **Social:** In addition to creating new job opportunities, bicycles provide users with greater access to essential services, such as water, food and health facilities.
- **Economic:** Bike users are able to transport more goods quicker and over longer distances. This results in more time available for work or selling products.

Pattern 2: Resource recovery

Business models that employ new technologies and capabilities to recover and reuse resource outputs through closed loop recycling, industrial symbiosis and upcycling. Resource recovery models are especially relevant for companies that generates large quantities of by-products during their manufacturing processes and/or have access to products at their end-of-life for reprocessing and closing the loop (Accenture, 2014).

Example: Diseclar (Sustainia, 2015)

According to the World Bank, Latin American and the Caribbean countries generate around 160 million tons of waste per day, but just 3% of it gets recycled. To help solve this problem, Colombia-based Diseclar has developed a manufacturing process that turns this waste into furniture suitable for indoor and outdoor use. By combining non-degradable plastic waste and agro-industrial waste, such as sugar cane pulp, coffee and rice chaff, the company created a sustainable product that looks and feels like solid wood, without the need for timber. In their first year of production, Diseclar plans to recycle 300,000 kg of plastic and 192,000 kg of agro-industrial waste, creating 300 recycling jobs in the process.

Main sustainability benefits:

- **Environmental:** According to Diseclar, their system reduces energy consumption by 85% compared to new material production.
- **Social:** Diseclar provides waste management training at collection centres and engages communities to raise awareness about recycling.
- **Economic:** Aside from creating jobs for local recyclers, Diseclar saves consumers money by offering a product with a longer life than traditional wooden furniture.

Pattern 3: Product life extension

Business model based on the extension of the lifetime of products and assets by employing strategies such as remanufacturing, refurbishment, repairing, upgrading or re-marketing. Life extension models are especially relevant for capital-intensive B2B segments or high-value B2C products (Accenture, 2014).

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Example: Nudie Jeans (Sustainia, 2015)

Nudie Jeans launched a repair service in 20 of its stores worldwide as part of the company's "Eco-Cycle" program, which aims to extend the life-cycle of jeans. Nudie Jeans' repair service provides customers the opportunity to return well-worn jeans to the stores for repair, for free, as many times as they like. In addition to offering free repairs, the Eco-Cycle program allows worn Nudie Jeans to be exchanged for a 20% discount off the next pair. Returned pairs are either refurbished or recycled for special projects such as limited edition rag rugs and camper seats.

Main sustainability benefits:

- **Environmental:** The Eco-Cycle program reduces waste, saves energy, and reduces the consumption of raw materials and water.
- **Social:** Since 2013 Nudie Jeans has paid a 'living wage' to all workers involved in the production of Nudie Jeans' T-shirts at their supplier in India.
- **Economic:** Nudie Jeans' prices are similar to other well-known jeans brands. Because of the repair service, Nudie Jeans last longer than other brands, giving the jeans a competitive edge on the market.

Pattern 4: Sharing platforms

Business models that enables the sharing of products and assets that would otherwise have a low ownership or use rate. Sharing platforms models are especially relevant for companies that are looking to maximize the use of the products, enhance productivity and value creation (Accenture, 2014).

Example: Vigga.us (Sustainia, 2015)

With a subscription at Vigga.us, parents receive regular packages of children's clothing to replace items as they become too small. For a monthly fee of \$52, Vigga.us provides 20 pieces of organic clothing in the child's correct size. Clothing is returned to Vigga.us when it becomes too small, and larger items are delivered. Returned clothing undergoes a quality inspection and is washed before delivery to another child. According to Vigga.us the leasing model has the potential of reducing a Danish child's textile waste by 70% to 80% by directing outgrown clothing to new customers and collaborating with a company that recycles the worn out clothing to produce new garments.

Main sustainability benefits:

- **Environmental:** After five years in business, Vigga.us will have saved at least 320,000 kg of chemicals and more than 112 million litres of water.
- **Social:** This solution provides sustainable kids' wear, free of harmful chemicals, which are produced under proper conditions.
- **Economic:** A Danish family can save up to \$2,100 the first year of parenting by subscribing to Vigga.us instead of buying the baby clothes from new.

Pattern 5: Product as a service

Business models that create value by a combination of products and services, turning incentives for product durability and upgradability upside down, shifting them from volume to performance. Product as a service models are especially relevant for companies that develop products with high value, high Total Cost of Ownership (TCO), and expertise on product operation, maintenance and reuse (Accenture,

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2014). 'Chemical leasing' is a business model that has been gaining popularity in the chemicals sector. This is because most customers do not want to buy chemicals, or have the hassle of handling and managing them, they just want the useful function provided by chemicals. For example, 'part cleaning' is a chemical leasing service that is replacing the conventional sales of solvents. Further details and examples of chemical leasing are presented in the Chemicals Sector Supplement.

Example: SOIL (Sustainia, 2015)

Through SOIL's social business design, customers rent a household "EkoLakay" toilet for a monthly fee of approximately \$5 per home. SOIL sanitation workers visit each household to collect toilet waste each week and deliver a fresh supply of carbon material which is used for "flushing" composting toilets. Hundreds of households subscribe to the service, with more signing up daily. The collected waste is then transported to the SOIL composting waste treatment facility where it is transformed into rich, organic, agricultural-grade compost through a carefully monitored process. Revenue from monthly toilet user fees, waste treatment fees, and sale of compost supports ongoing business development costs.

Main sustainability benefits:

- **Environmental:** Safe management of human waste prevents pollution while restoring ecosystems.
- **Social:** Safe sanitation reduces risk of diarrheal disease, which is the second leading cause of death among children under five years old globally.
- **Economic:** SOIL reports that it has sold approximately 75,000

gallons of compost to date, creating livelihood opportunities throughout the ecological sanitation cycle.

Pattern 6: Multi-sided platform

This type of business models relies on having at least two distinct customer segments that provide a mutual benefit in some way, which would not exist without both parties. Examples include eBay (buyers + sellers), Visa (shoppers + shopkeepers), and Google (users + content providers).

Example: MLouma

MLouma (www.mlouma.com) is a platform, accessible via the Internet, SMS and a call centre, which connects farmers directly to green grocers throughout Senegal. By allowing farmers to market and sell their goods in real-time to hundreds of small grocers, both sides are able to achieve higher profits by cutting out the many intermediaries that existing in the conventional value chain.

Main sustainability benefits:

- **Environmental:** Direct transportation from the farmer to the grocer reduces fuel consumption due to transportation and storage whilst reducing the number of steps in the logistics chains helps to reduce product losses.
- **Social:** Farmers have greater control over their business and no longer need to rely on large intermediary companies.
- **Economic:** Farmers and green grocers achieve higher profits. Farming jobs are more secure due to the increased profits that can be achieved.

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Spending some time thinking about how these patterns could be applied to the company's business model can be a useful way of identifying radically different approaches to delivering a profitable and sustainable business model.

References and resources

Business model patterns:

- Osterwalder, A., & Pigneur, Y. (2010). Business model generation: a handbook for visionaries, game changers, and challengers. Wiley, London.

The Circular Economy:

- Accenture (2014). Circular Advantage Innovative Business Models and Technologies to Create Value in a World without Limits to Growth [Online]. Available from: <https://www.accenture.com/gb-en/insight-circular-advantage-innovative-business-models-value-growth>
- WRAP (2015). Economic Growth Potential of More Circular Economies [Online]. Available from: <http://www.wrap.org.uk/content/economic-growth-potential-more-circular-economies>

Sustainable business model case studies:

- Sustainia (2015). SUSTAINIA100 2015 [Online]. Available from: http://sustainia.me/resources/publications/4th_Sustainia100_2015.pdf

→ Further information in the Agri-food, Chemicals and Metals Supplements

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TIPS & TRICKS

BRIDGE THE GAP BETWEEN PRIMARY PRODUCERS AND CUSTOMERS

There may be an opportunity to find business model solutions to bridge the gap between farmers and consumers. This will allow farmers to obtain higher prices for their crops and also provide the consumers with the experience of being closer to the farmer. In Indonesia, Cassia COOP is a cinnamon processing and trading company with a vision *“To export cinnamon products and patchouli oil from Indonesia while removing middlemen from the supply chain. As a result linking farmers with end-users and vice versa in order to create transparency and interdependency. Creating a fair*

and efficient supply chain while having a sustainable positive impact in Sumatra, Indonesia.”

The company collaborates with several NGOs to give farmers training in sustainable farming methods and make sure they comply with certification criteria. Cassia COOP processes and distributes cinnamon products on behalf of the farmers by guaranteeing them a good price for their cinnamon as well as a percentage of profits when their products are sold. Sustainability and transparency is a key feature of their business model and the company has made positive environmental and social impact in the region. Economic sustainability is also improved by this type of business model as a larger propor-

tion of the profit is shared between farmers and processors, rather than traders and distributors, while end users get a better price. More information can be found at: <http://www.cassia.coop/>

COMBINE SERVICES WITH GOODS TO FULFIL CUSTOMER NEEDS

An emerging business model in the food and drink processing sector is offering subscription based services rather than goods, directly to the consumer. NatureBox is a company in the United States that has identified the consumer need for healthier snacks in that market. It has developed over 120 different varieties of healthy snacks to cater to that

need. Customers subscribe to a service where they choose the quantity and frequency of snacks delivered to their home. The company is doing particularly well in areas where there is no access to supermarkets selling sustainable and healthy food. In 2013 the company experienced 2000% growth. More information can be found at: <https://naturebox.com/homev2/>

ALTERNATIVE PROTEIN SOURCES

There are several different alternatives for meat products on the market, developed and marketed for people that do not consume meat (vegetarians, vegans). However there is an increased concern about eating meat (particularly red meat) among

people who enjoy eating it. The concern is mainly due to the very high environmental impact of meat as well as health concerns identified in the recent report from the International Agency for Research on Cancer, the cancer agency of World Health Organisation (IARC, 2015). Some food companies have therefore started creating innovative products from alternative protein sources that are just as tasty and have just as good texture as meat. Pulses (beans, legumes) are often used as a protein source, but there are various other alternative protein sources such as insects and worms. The key for successful companies was understanding the consumer needs, which was a tasty, protein-rich meal, rather than eating meat.

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LEARNING CASE STUDY

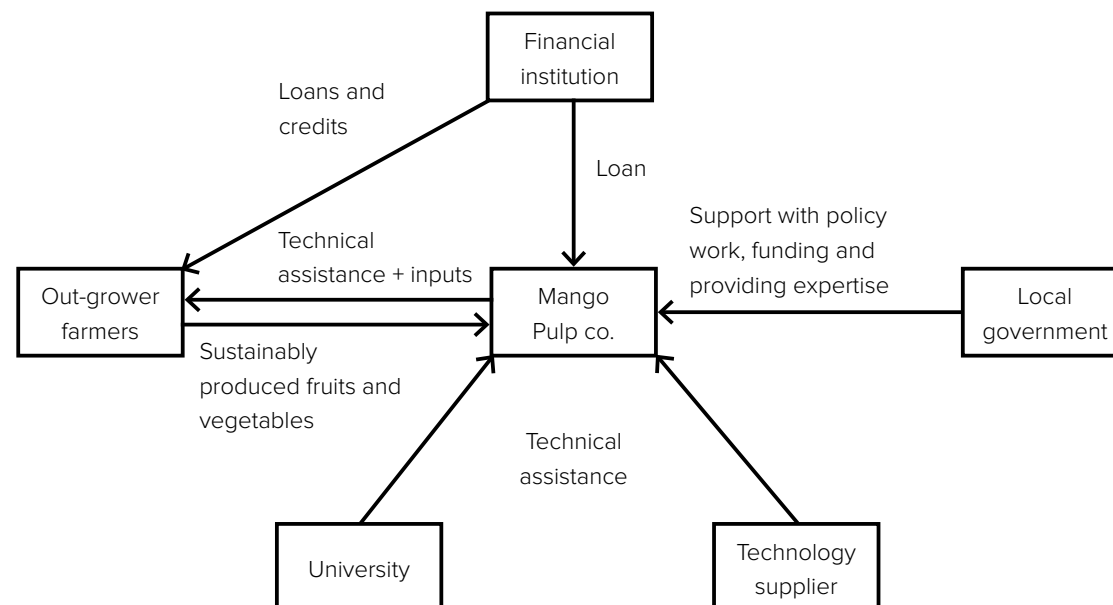
Food for Progress

Food for Progress is a Swedish company with the goal to create tasty, nutritious and climate-savvy food that can feed all people on earth. They want to drive the development towards sustainable food through creating unique soy based products and actively trying to change unsustainable consumer behaviour, such as eating too much meat. In 2015 the company was awarded the prize by the Swedish Food Industry Association for being the most innovative company and contributing significantly to the development and competitiveness of the Swedish food industry.

Business model #1: Cooperative business model

In order to achieve their strategic goals, the Eco-innovation project team at Mango Pulp Company have generated a new business model idea based on cooperation with farmers, financial institutions as well as universities and technology suppliers. The objective is to produce a variety of premium products with improved sustainability and competitiveness and to valorise the by-products. Figure 11 is a graphical representation of the cooperative business model of Mango Pulp Company.

Figure 11. Key partners in achieving a sustainable business model.



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The **value proposition** captures three of the main aspects of the new business model:

1. The new products are made using sustainably sourced raw materials
2. Improved quality of the finished products, and
3. Diversified operations to other fruits and vegetables to make better use of personnel and equipment.

During the sustainability assessment, it was concluded that the highest environmental and social impacts came from the production stages of the value chain. The company has therefore put effort into promoting conservational agriculture, which is based on minimal soil disturbance, permanent soil cover, and annual crop rotation. In practice, this means that Mango Pulp Co. has engaged in a **partnership** with the farmers where the company is now procuring all fruits and vegetables and processing them as well as providing technical assistance. In return, the farmers are following the sustainable farming methods required by Mango Pulp Co., have mango as a main crop, and only sell their produce to the company.

The company has applied for an organic label after **securing a supply of sustainably** grown mango and replacing calcium carbonate for ripening purposes. Ripening mangoes with ethylene gas in an airtight room resulted in high quality mangoes and uniformly ripened mangoes. Ethylene gas for ripening fruits is approved by the organic regulations in most countries.

Diversifying into other fruits and vegetables created more opportunities to enter **new markets**, such as dried fruits, fruit and vegetable juices, jams, pickles, and healthy snacks. The company has become a supplier to the public sector (hospitals and schools)

thanks to sustainable public procurement policies. The company is also supplying restaurants and hotels in order to reach their goal of increasing sales of processed fruits and vegetables. The new products are packaged in customised packaging solutions for each customer to support sustainable consumption and eliminate waste.

Since Mango Pulp Co. was new to some of the variations in production needed for these products, technical universities and equipment suppliers have been helpful in developing them and optimizing the processing line to minimise water and energy consumption. They also provided assistance when valorising by-products like skins, seeds, and other parts of the plant not used in the product. Some options that are still being considered include selling mango skin to cosmetic companies, drying of overripe fruits and vegetables, making flour out of mango seed or investing in a biogas digester in order to make biogas and organic sludge that could be used by farmers as fertilizers.

New **packaging solutions** were developed with the help of an R&D partner and customized to each customer segment. Fruit and vegetable pulp for the consumer market is now packaged in appropriately sized re-sealable, recycled (and recyclable) plastic bags. The plastic bags are made of a special PA/PE polymer and have a significantly lower weight and volume than tin cans. They are suitable for vacuum or modified atmosphere packaging for increased shelf-life of products while allowing significant energy savings during processing. For instance, the high energy use for can sterilization is now completely mitigated. Products intended for hospitals, schools, hotels and restaurants are packaged in much larger bags equipped with a solution to dispense of the content to consumer-tailored portions. Mango Pulp Company provides the dispenser in return for

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a commitment from the customers to purchase their products. Both packaging innovations aim to eliminate a lot of the post-processing waste generated in the value chain of Mango Pulp Co.

The implementation of this new business model would not have been possible without financial support. **Investments** had to be made in agricultural production, processing equipment, new technologies, product development and certification. For instance, it takes 4 years after planting the new grafted mango trees before the first harvest is ready and an additional 3 years before the maximum yields are achieved. Most farmers would not have a source of income during these years as new higher quality grafted trees are planted.

The Mango Pulp Co. itself needed: financial resources to develop new processing lines for products not currently manufactured; new technologies for valorisation of by-products; and new packaging and dispensing solutions. The local government has been a valuable partner that provided incentives for sustainable development and creating employment in the region. As a part of their National Development Plan, the local government co-financed the shift to out-grower schemes. The contact and access to the government funds have been negotiated and facilitated through the Service Provider organization.

There are other **key partners** not specifically represented in the Business Model Canvas that played an important role in helping the company become more sustainable. For instance, Mango Pulp is cooperating with a distribution company that guarantees fast deliveries in chilled conditions in order to maximize the quality of fruits and vegetables. A certification body has also been a key partner because getting certified and labelled as sustainable was crucial to

entering international markets. The costs associated with certification will be covered by securing more revenue from the expected increased product sales after meeting certification standards. This is a long process and communication and collaboration with the certification body was needed. The company expected to get the "100% organic" label 3 to 4 years after the initiation of the new business model and strategy.

The alternative business model for Mango Pulp Company represented in a business model canvas blow.

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LEARNING CASE STUDY OF BUSINESS MODEL CANVAS

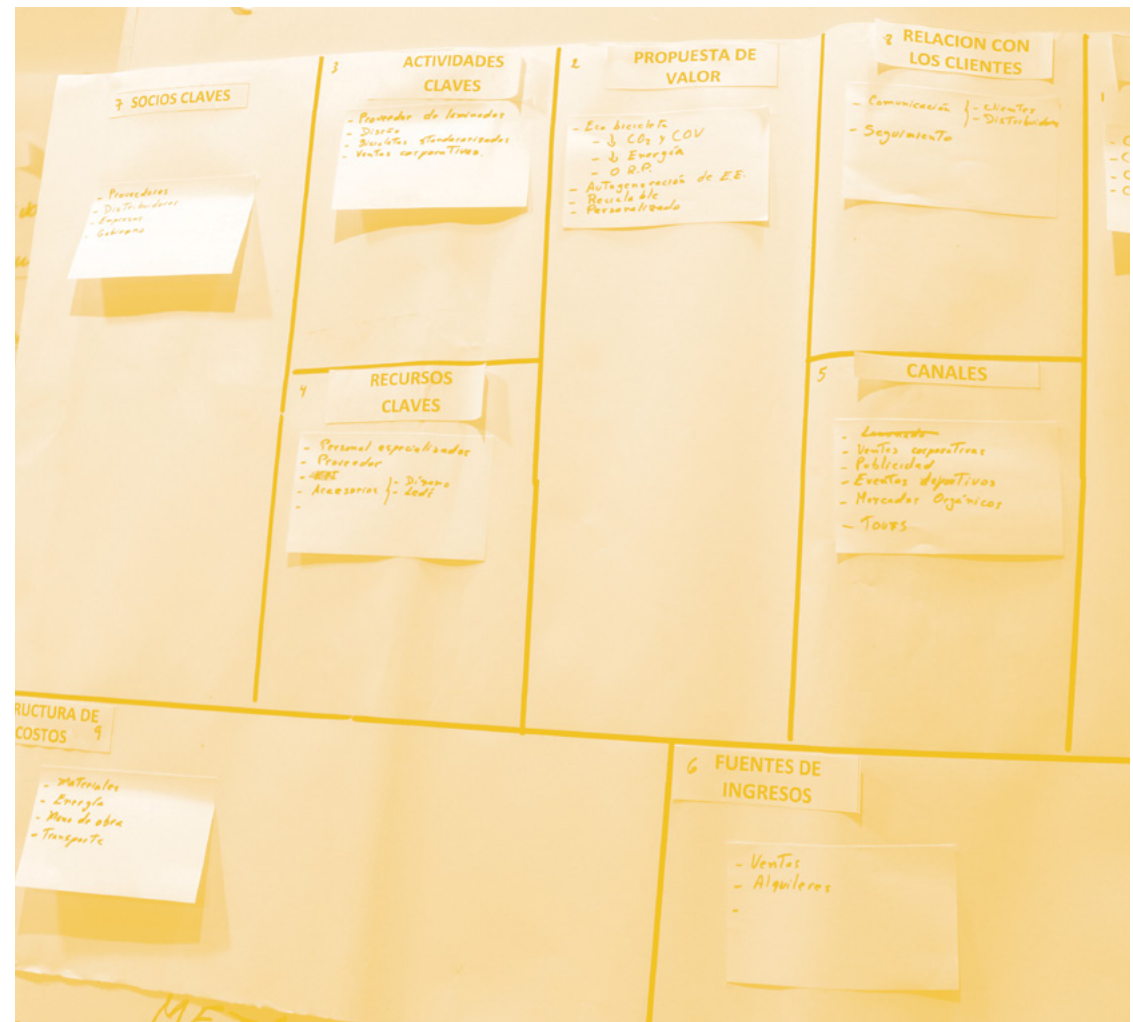
Key Partners Farmers University Financial institutions Technology suppliers Transporters Certification body Packaging suppliers	Key Activities Fruits and vegetable processing Research and development Training on conservation agriculture for farmers Value addition to waste Acquire organic label	Value Propositions High quality, good tasting, sustainably sourced packaged fruit and vegetable products	Customer Relationships E-marketing Personal contact	Customer Segments International wholesales and retailers Local retailers Animal feed producers Cosmetic company Hospitals Schools Restaurants Hotels
	Key Resources Trained farmers Biomass Processing facility Creative and experienced staff		Channels Sales force	
Cost Structure Labour Ingredients and processing aids Water Cleaning chemicals Wastewater treatment Natural gas		Revenue Streams Sales of packaged fruits and vegetable products Sales of secondary products such as peel and stone to the cosmetic and animal feed industry		
Packaging Maintenance of equipment and facilities Rent Investment in equipment and infrastructure Certification Transportation Electricity				

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BACKGROUND INFORMATION

References

Veronique Bouvard et al. on behalf of the International Agency for Research on Cancer Monograph Working Group (2015). Carcinogenicity of consumption of red and processed meat. The Lancet Haematology, Volume 3, Issue 1



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TIPS & TRICKS

ASSESS AND DESIGN PRODUCTS FROM A LIFE CYCLE PERSPECTIVE

In Belgium, the small manufacturer of ecological cleaning products, Ecover, made a shift to a more radical eco-innovative path and set eco-innovation at the core of their long-term business strategy. In particular, Ecover started considering the entire value chain of its products and introduced innovations across all dimensions of the business: from a new business model to supply chains and sourcing strategies in order to respond to market demand ahead of competitors. This led to their big expansion in the market of ecological cleaning products. Ecover used their Diamond Model sustainability assessment technique to identify product innovation poten-

tials across the whole life cycle of the product, such as extraction phase, usage phase, and environmental absorption phase. The product innovations that were introduced helped the company to achieve substantial business benefits and growth with added-value by producing a sustainable product free of harmful substances and effective with a cold water wash, thereby addressing a key hotspot in the life cycle of detergents: hot water use.

Furthermore, Ecover introduced innovations through open source collaboration (involving partners and scientific institutions) in all processes including manufacturing and distribution channels by promoting dispensing machines with retailers and online

purchases. You can use a similar approach to identify and improve your products' life cycle impacts.

PROVIDE YOUR PRODUCT AS A SERVICE

The 'product as a service' business model pattern introduced in the Eco-innovation Manual has been applied in the chemical sector in the form of "Chemical Leasing". "Chemical Leasing" has the potential to combine resource efficiency and sustainability performance with profit generation and competitive advantage. When implementing "Chemical Leasing", users and chemical suppliers work together more closely and share knowledge in order

to optimise the production processes. The business model implies that the unit of payment is changed, from quantity-based to service-based. Through optimised processes and a common interest of all actors, the quantities of chemicals are reduced, which benefits the environment and human health. Due to the changed unit of payment, all partners gain economic benefits from the reduced amount of chemicals. You can find an example for improvements resulting from the implementation of the "Chemical Leasing" business model in the case study below.

In Egypt, about 95% of the companies of the industrial sector are SMEs, a large share of that is made up by chemical companies. In fact, the "Chemical Leasing"

business model was applied by a solvent supplier. The hydrocarbon solvent supplier supervises the application of the solvent in the process of cleaning equipment at General Motors Egypt and receives payment per vehicle produced instead of solvents sold. When the cleaning process is completed, the supplier takes back the solvent waste for recycling at its plant. This model has achieved cost reductions of 15% related to the reduction of solvent consumption from 1.5L per vehicle to 0.85L per vehicle. Other economic benefits cited by partners include sharing liability and benefits as well as the creation of a long-term business relationship (Chemical Leasing, 2016)

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LEARNING CASE STUDY

Business Model #1: Fibre Leasing business model

After following the steps outlined in the Eco-innovation manual, a new “Fibre Leasing” business model has been proposed for TipTop Textiles Co. and is captured using the business model canvas. Several value propositions are shown in the business model canvas. However, only the first one will be described in detail, as it is the core of the “Fibre Leasing” business model.

In this closed loop business model, the fibres used in the making of garments for corporate wear customers are owned by TipTop Textiles Co. and are leased for the garment production and use. This enables TipTop Textiles Co. to take back the used wear and recover the fibres through a chemical recycling process. By working with suppliers and customers in the value chain, TipTop Textiles Co. will prolong the life of leased corporate wear and then chemically recycle textiles at their end-of-life in order to lower the amount of chemical-based products on land-fills.

The value proposition is the leasing of high-quality polyester-based textiles with a customized functionality (durability, wrinkle-free, low temperature washable, etc.) that is chemically recycled from used wear. Revenue from this value proposition is acquired via a leasing contract that is negotiated based on the type of material, required functionality, and the number of employees belonging to the serviced client.

In order to improve sustainability performance across the value chain, an additional value proposition is offered to customers: a web-tool. The online web-tool helps customers evaluate the life cycle impacts of their textile design decisions. For example, the tool will allow the customers to compare different types of textile properties on type of material, colour, functionality, etc.. An additional service fee is charged

to aid customers for special requests to adapt their design and to produce the life cycle impact in order to communicate the product's sustainability performance with their end market.

The key activities include the operation of a collection, repair and recycle system in which it is first evaluated, whether the clothes can be re-used without chemically recycling the waste material to new polyester. The technical sales team will also provide training to corporate-wear customers on how best to use the products to avoid damage, including the optimum washing procedures (e.g. best temperature, amount and type of biodegradable detergent). In addition to providing a stable revenue stream and by diversifying the company's portfolio, the new business model will result in the elimination of chemicals on the Zero Discharge of Hazardous Chemicals Restricted Substance List (e.g. endocrine disruptors) and thus minimizing adverse environmental and human health effects from their products.

BM.4 Generate business model concepts at the big picture level

LEARNING CASE STUDY OF BUSINESS MODEL CANVAS

An alternative value proposition to the “Fibre-leasing” business model is indicated in brackets.

Key Partners <i>Chemical suppliers (ink and dye feedstock)</i> <i>Local university</i> <i>Textile raw material suppliers (cotton and polyester pellets)</i> <i>Local partner garment company</i> <i>Corporate wear (e.g. eco-tourism) and school uniform customers:</i> <i>Suppliers organic fibres</i> <i>Distributors of sustainable textiles</i> <i>Design team of clients</i>	Key Activities <i>Collection and chemical recycling of corporate wear products</i> <i>Ink manufacturing</i> <i>Textile manufacturing: weaving or knitting and textile finishing, including dyeing and printing</i>	Value Propositions <i>High quality polyester textiles based on recycled polyester fibres [1]</i> <i>High quality organic cotton textiles meeting eco-label requirements [2]</i> <i>Safe and renewable based inks for the textile industry [3]</i> <i>Web portal for brand designers to show customers the life cycle impacts of their choices for design (including fibre choice, colour, finishing properties) [4]</i>	Customer Relationships <i>Integrate customer brand information with production (e.g. printing label information)</i> <i>Source of information related to textile sustainability</i> <i>Provide data for eco-labels in integrated form</i>	Customer Segments <i>Direct customers</i> <i>Other textile and printing mills [3]</i> <i>Local garment company</i> <i>Distributors (domestic and export)</i> <i>End customers</i> <i>Corporate wear consumers concerned about sustainability (e.g. eco-tourism outfits, large companies with GRI reporting, etc.) [1]</i> <i>School uniforms [1]</i> <i>Parents of infants and toddlers [2]</i> <i>Young adults (18-30) from growing middle class [2]</i>
Cost Structure <i>Labour</i> <i>Electricity</i> <i>Diesel Fuel for process heating</i> <i>Technical facilities</i> <i>Textile raw materials: cotton, polyester</i>	Key Resources <i>Logistics (for delivery/retrieval) of used textiles</i> <i>R&D Department</i> <i>Quality Control Department</i>		Channels <i>Integrated ordering system (CRM)</i> <i>Trade conventions, Trade magazines</i> <i>Newsletter on emerging sustainability and regulatory trends</i> <i>Sustainability awareness raising seminars in schools and companies</i> <i>Facebook site</i> <i>Web stores</i> <i>Technical sales team trained on sustainability issues</i> <i>Technical support to garment companies</i>	
	Revenue Streams <i>Clothes leasing contracts for polyester-based textiles</i> <i>Sales of eco-labelled cotton products</i> <i>Sales of “sustainable” ink to other textile and printing companies with trademark</i> <i>Service fee for user of LC design website portal for non-clients and a top-up service fee for customers</i>			

BM.4 Generate business model concepts at the big picture level

BACKGROUND INFORMATION

Alternative business model #2

Manufacture and sell “Sustainable Ink” to domestic and export markets. The new business model will focus on developing “Sustainable Ink” for textile printing based on safer chemicals primarily produced from local renewable resources. The “Sustainable Ink” will be sold to customers interested in accessing the growing market for sustainably produced clothing. This business model idea is an example of the “Circular supplies” business model pattern introduced in the Eco-innovation Manual.

References:

- Chemical Leasing. (2016). Cleaning equipment with hydrocarbon solvent. [ONLINE] Available at: <http://www.chemicalleasing.com/sub/pilot/solvents.htm>. [Accessed 4 July 2016].

BM.4 Generate business model concepts at the big picture level

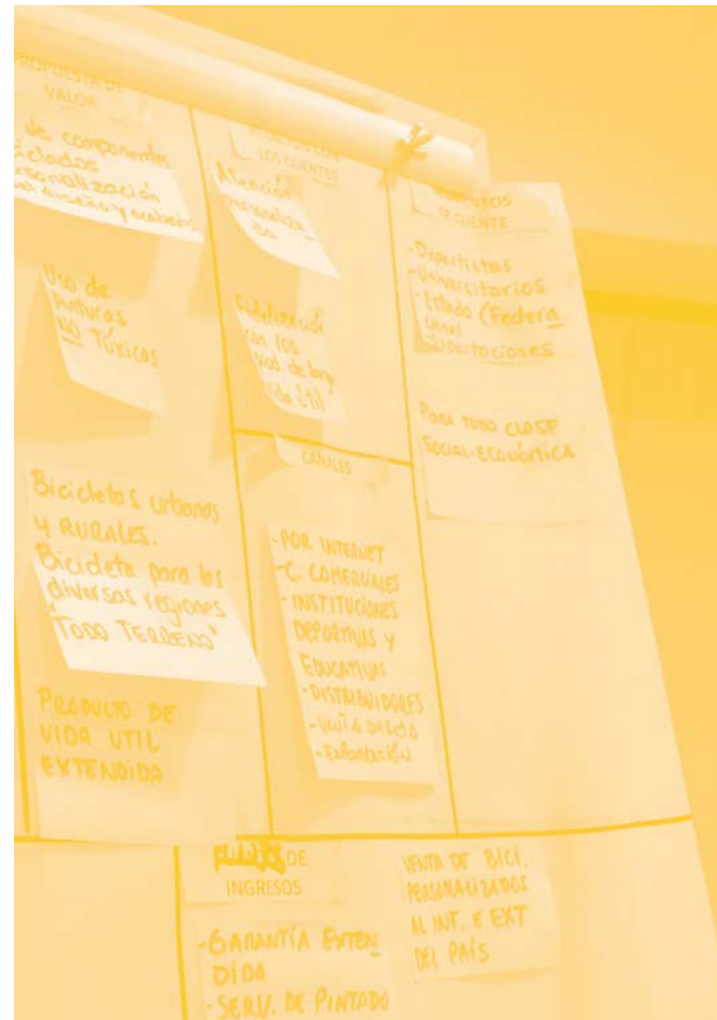
LEARNING CASE STUDY OF BUSINESS MODEL CANVAS

The strategic goals for BikeBizz Co. set in ST.3 and ST.9 are built upon the SWOT analysis and aim at overcoming sustainability hotspots. All strategic goals are transferred into the *Business Strategy* template and form the overall business strategy (ST.14). In order to implement the business strategy, it is necessary to formulate appropriate business models that are aligned with goals, markets, products and selling points specified in the business strategy. The business models implicate ideas, approaches and guidance on how to achieve the strategic goals. Below, three business model options for the BikeBizz Co. are described.

Business Model Option 1: “Return & Reuse”

Driven by the strategic goals on reducing metal waste across the product lifecycle, increasing revenue, and improving profit margin, the “Return & Reuse” business model idea was inspired by the ideas from the TOWS matrix to ‘use the proximity of the shop to the production site for take back actions for end-of-life bikes to enhance recycling’, and ‘use the high demand for repair, maintenance for enhancing the life of a bike to reduce waste’. With this business model, customers bring bikes at end-of-life to BikeBizz Co. where they are either adapted and resold or dismantled for reuse of the single parts. This scheme also comprises a discount scheme, which means that the customer can buy a new bike for a lower price when she brings back her old one. The company starts offering customer services like repair and maintenance to cater for the customer’s demand for this type of service and gains additional revenue.

The new sustainable “Return & Reuse” business model is captured in the following panel (Table 15) using the business model canvas.

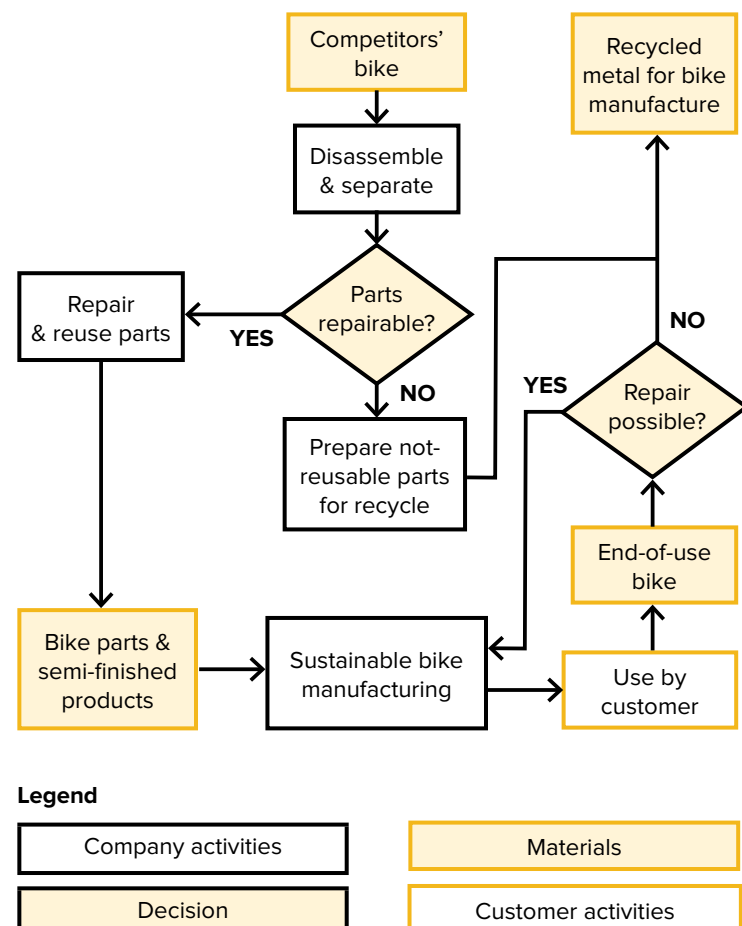


BM.4 Generate business model concepts at the big picture level

Key Partners <ul style="list-style-type: none">Suppliers of manufacturing equipmentSuppliers of steel and aluminium semi-finished productsSuppliers of process agents and paint pigmentsEnergy providersRetail partner(s)Funding institutionCustomers involved in return scheme	Key Activities <ul style="list-style-type: none">Manufacturing of customised bike frame and rims including treatment steps: coating, painting and assembly of bicyclesServicing during use phase: maintenance and repairTake back activities: appraisal of returned bikes, repair of bike as a whole or disassembly and reuse of single componentsMarketing, awareness creation & selling of products including exportTraining employees on health and safety issues and providing personal protective equipment (PPE)R&D activities	Value Propositions <ul style="list-style-type: none">Return & Reuse scheme consisting including:Design and manufacturing of sustainable bicycles customised and accessorized according to the customer's body type, riding style and needsBicycle remanufacturing and maintenanceAdditional features include:Different levels of customisationDifferent levels of servicing and product warrantyDiscount schemes for new bikes when donating other bikes at end-of-life.	Customer Relationships <ul style="list-style-type: none">Personal direct communication with customers and retail partners: face-to-face, telephone, internetCustomer serviceCustomer retention because of warranty service	Customer Segments <ul style="list-style-type: none">Local customersPersonalCompaniesRetailers/wholesalers/distributorsPartner retail shop in the neighbouring region (export)
Key Resources <ul style="list-style-type: none">Flexible manufacturing facilities & manufacturing equipmentMaterials including recycled and reused material and partsNon-polluting process fluids used for production: lead free paints, water based solventsSkilled and dedicated staff (experienced in e.g. recycling possibilities, design or ergonomic issues)Customer service department (e.g. technicians, service vans)	Channels <ul style="list-style-type: none">Sales force in own small bike shopMarketingCustomer servicesAssociations (e.g. trade/tourism organization, NGOs)			
Cost Structure <ul style="list-style-type: none">Economic costs (monetary – fixed, variable)Materials procurementManagement costs: labour, administrative, marketing costsEquipment costs (including new equipment for process optimization)Transportation (of materials, products and parts)Performing of repair services for bikes under warranty without getting monetary reimbursementPaying of customers who return their bikes			Revenue Streams <ul style="list-style-type: none">Sales of sustainably produced bikes – locally and exportSale of spare partsRevenue from repair and aftersales servicesRevenue from scrap sellingHigher profit margins due to reduced processing costs and offered services	

BM.4 Generate business model concepts at the big picture level

Figure 8: Graphical representation of the new business model of the BikeBizz Co. (Business model option 1: “Return&Reuse”)



Business Model Option 2: “Bike Leasing”

The “Bike Leasing” business model is built upon the strategic goals on increasing revenue and improving profit margin, which can lead to higher financial capital for investment through regular leasing rates and higher total prices. In addition, the model alternatively addresses the demand of customers for more sustainable products and to reducing waste generation and transport emissions. In the case of the BikeBizz Co., a way of implementing eco-innovation could involve developing a new business model option in which the company would cooperate with the public sector through their green public procurement program. The company could offer a bike-leasing scheme to supply sustainably produced bicycles to authorities when equipping their fleet.

Business Model Option 3: “Design for Sustainability”

Driven by the strategic goals on reducing waste generation along the product life cycle, increasing revenue and becoming a leader on sustainable products, the “Design for Sustainability” business model was inspired by the ideas from the TOWS matrix ‘use the proximity to the retail shop for improved customer services (repair, maintenance and warranty)’ and ‘use the high demand for repair and maintenance for enhancing the life time of a bicycle to reduce waste’. An extension of the lifetime of the product can be achieved by applying the Design for Sustainability principles¹. In this business model option, the BikeBizz Co. would need to focus on implementing the principles into the design process steps and apply them further down the production process including the management aspects, e.g. the procurement of appropriate materials and components.

BM.4 Generate business model concepts at the big picture level

Based on the Value Management results from the first project, a scheme for the take-back system was devised and is illustrated below. There are two sources of raw materials used in the “Return & Reuse” scheme:

- Bikes that were not manufactured by BikeBizz Co. (competitors’ bike)
- Bikes that were manufactured by BikeBizz Co.

Regardless of the source of the bike, the parts and components’ suitability for reuse are assessed according to standardised tests. Bikes manufactured from BikeBizz Co. are designed for durability, reuse, and ease of repair. The yield of reusable/repairable parts is expected to be 95%. Bike components unable to be reused or repaired are sent to a local recycler so that BikeBizz Co can receive recycled metal materials in return, thereby closing the loop of its local business.

BACKGROUND INFORMATION

Some types of business models that can be found in the metals sector are:

Service business models – These allow extensive bundling of services with products, such as maintenance support and extended warranty, aftersales, customer training, product utility services, etc., that have the potential to bring different benefits for the company including significant impact on overall profitability of the company, strengthening value chain relationships and lowering the environmental impacts (e.g. reducing waste generation by extending life time of products).

Roland Berger carried out an extensive study on evolution of services in engineering companies [Berger, 2014]. Based on the results of the study they identified four types of business models which can be employed with regard to aftersales services for different strategies explained in section ST.1 Plan my data gathering strategy

- Technology leaders benefit in aftersales, too, from their niche products’, patented elements and proprietary customer access. But aftersales has to secure technology leadership throughout the product life cycle.
- Price leaders, by contrast, face tough competition as products are less customer-specific and offer neither patented elements nor proprietary customer access. Customer decisions are driven mainly by price – and services must reflect this.
- Application leaders are characterized by specific process expertise with a strong focus on building prototypes or customer-specific engineered products. In aftersales, they need experts in particular with detailed application and customer knowledge to regularly upgrade the machines.

BM.4 Generate business model concepts at the big picture level

- Efficiency leaders, like price leaders, do not manufacture any patented parts and therefore face tough competition. After sales revenue is mainly generated by billing hours of service personnel's time. To guarantee global aftersales coverage, an efficient service network and the right critical mass are essential.

Closed loop business models – The approach is that products are designed for ease of reuse, disassembly and remanufacturing, or recycling, with the understanding that it is the reuse of waste materials reclaimed for end-of-life products, rather than the extraction of resources, that is the foundation of economic growth. Traditionally, this has been applied to high value metals such as gold and silver, however most metals are easily recyclable making the approach applicable to different metal supply chains. Moreover, the closed loop business model helps companies to become more sustainable by reducing the use and waste of resources, while diminishing possible regulatory burdens (e.g. deposit fees). In the Industry example 3, the Caterpillar case study illustrates how a company is profiting from applying a close loop business model.

Industry example 3: Remanufacturing – a sustainable solution

Caterpillar is the world's leading manufacturer of construction and mining equipment, machinery and engines. Their business strategy is focused on ways to maximise the life cycle benefits of their products, while minimising the economic, social and environmental costs of ownership in close cooperation with stakeholders across the value chain of their products. Caterpillar's remanufacturing programme, Reman, serves as a business model based on an exchange system whereby users return a used component (core) in

return for remanufactured products. CAT remanufactured parts and components offer like-new performance, have a long, reliable service life and a same-as-new Cat parts warranty.

ECONOMIC BENEFITS

- Reman operations contribute to lowering 65% of the costs found in the actual parts and components and increasing profit margin, whilst still producing components of the highest quality
- CAT Reman activity is employing over 3600 people worldwide

ENVIRONMENTAL BENEFITS

- Remanufacturing dramatically lowers the volume flow of resources to more than 60,000 tonnes of end-of-life iron recycled annually and reduces landfill pollution to more than 85 million tonnes per year across the value chain
- 2.3M units (78M kg) are recovered contributing to keeping non-renewable resources (e.g. metals) in circulation for multiple lifetimes
- For example remanufacturing a cylinder head leads up to 61% fewer emissions of greenhouse gases and 86% reduction in energy used compared to making a new product²

SOCIAL BENEFITS

- Customer services that go beyond selling, from financing to providing safety information and videos
- Demonstrating commitment to community stakeholders and the environment by taking the corporate social responsibility initiatives
- Innovative organizational systems that facilitate cooperation with the supply chain stakeholders – CAT Proprietary Core Management System

BM.4 Generate business model concepts at the big picture level

The “Leasing business model” – An approach, in which metals are leased for their use in the end-products or customers lease the end-products. These types of models often give manufacturers a reason to think about the product’s life cycle. A good example is the cooperation initiated by the Dutch consultancy Turntoo between the German precision engineering giant Bosch and Eigen Haard, the Amsterdam social housing provider. Their new leasing business model is based on the Value Proposition to offer washing services to the Eigen Haard tenants, who initially pay €10 per month for the service including water and energy consumption, while the washing machines are provided by Bosch, who retains ownership of the machines. In this business model Bosch provides energy saving and recyclable washing machines, cater for their functioning as well as maintain them to secure the machines life cycle. As a result, the company pays for energy and equipment costs and not the customer as in conventional business models.

BACKGROUND INFORMATION

References:

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