

Business Models and Circular Business Models

Abstract This chapter responds to the need for more clarity in the lexicon in use in the circular economy field. Therefore, it outlines a conceptualisation of the circular business model. This chapter presents a set of propositions leading to a preliminary conceptualisation of the circular business model by merging themes from the business model literature with the implications for business models deriving from the application of the circular economy thinking inferred from practical examples and the literature. This chapter includes recommendations for future studies on circular business models.

Keywords Business models · Circular business models
Value proposition · Value creation and delivery · Value capture

3.1 INTRODUCTION

The visibility of the CE framework has increased at the academic, policy and business levels concurrently with the establishment of the EMF. However, as is often the case with a new concept, there is a need for more clarity in the lexicon in use. Confusion on the meaning of the words CE and divergence in the CE terminology in use exist (Bocken et al. 2016; Gallaud and Laperche 2016; Murray et al. 2015). In the nascent academic literature on the CE, some definitions of the CE are offered. However, it is easier to spot differences than similarities among them, and

in some cases, they add complexity to the terminology in use bringing risks of complicating rather than simplifying the concept. Geissdoerfer et al. (2017) define the CE as: ‘a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling’ (p. 759). Murray et al. (2015) propose: ‘the Circular Economy is an economic model wherein planning, resourcing, procurement, production and reprocessing are designed and managed, as both process and output, to maximize ecosystem functioning and human well-being’ (p. 9). Then Korhonen et al. (2018) suggest: ‘circular economy is an economy constructed from societal production-consumption systems that maximizes the service produced from the linear nature-society-nature material and energy throughput flow. This is done by using cyclical materials flows, renewable energy sources and cascading-type energy flows. Successful circular economy contributes to all the three dimensions of sustainable development. Circular economy limits the throughput flow to a level that nature tolerates and utilises ecosystem cycles in economic cycles by respecting their natural reproduction rates’ (p. 39). De Jesus and Mendonça (2018) add: ‘the CE can be defined as a multidimensional, dynamic, integrative approach, promoting a reformed socio-technical template for carrying out economic development, in an environmentally sustainable way, by re-matching, re-balancing and re-wiring industrial processes and consumption habits into a new usage-production closed-loop system’ (p. 76).

The most comprehensive and commonly used CE definition, already presented in Chapters 1 and 2, conceptualises the CE as ‘an industrial system that is restorative or regenerative by intention and design [that] replaces the end-of life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impairs reuse and aims for the elimination of waste through the superior design of materials, products, systems, and within this, business models’ (EMF and McKinsey 2012, p. 7). This definition makes it clear that business models are one of the crucial constituents of such an economy, and this is confirmed in other studies (Bocken et al. 2016; De los Rios and Charnley 2017; Hopkinson et al. 2016; Lacy and Rutqvist 2015; Scheepens et al. 2016) and in subsequent EMF’s research, which identifies new business models as one of the building blocks of a CE (EMF 2015). Yet, there is very little attention and clarity on circular business models in

the academic literature to date (Antikainen and Valkokari 2016; Blomsma and Brennan 2017; Goyal et al. 2016; Kirchherr et al. 2017; Lewandowski 2016). The intention of this chapter is to bring some clarity in the emerging CE literature by providing a more systematic conceptualisation of the circular business model. This is potentially useful given the limited contribution to the topic that has come from business disciplines to date (Moreno et al. 2016). A diversion into the business model concept and related literature is necessary first to understand what a business model refers to and to consider to what extent the CE thinking challenges traditional business models thinking. Consequently, the remaining parts of this chapter are organised in the following way. Section 3.2 reviews the business model literature to highlight the definition of the business model and its main characteristics. Section 3.3 analyses the academic, practitioner and grey literature that has given attention to business model innovation in the CE and identifies some examples from the business community that clarify what the application of CE principles means in practice and its implications. The conceptualisation of the circular business model, currently almost inexistent in the literature, is presented in Sect. 3.4 by merging themes from the business model literature with the implications for business models deriving from the application of the CE thinking inferred from practical examples and the literature. This conceptualisation is closer to a typology (purely theoretically driven) than to a taxonomy (purely empirically driven). The chapter then concludes with recommendations for future studies on circular business models. Recommendations concern the choice of the industry, the type of company to investigate and the most suited research method.

3.2 BUSINESS MODELS

Total agreement on what a business model really is does not yet exist (Arend 2013; Casadeus-Masanell and Ricart 2010; DaSilva and Trkman 2014; Osterwalder et al. 2005; Zott et al. 2011). Yet, the concept of the business model (BM hereafter) is subject of considerable interest within the business and academic communities (Amit and Zott 2012; Baden-Fuller and Morgan 2010; Lecocq et al. 2010; Wirtz et al. 2016). BM innovation is of major interest to managers (Casadeus-Masanell and Ricart 2011; IBM 2015) as it is considered an important source of competitive advantage (Spieth et al. 2014), even more than product and service innovation (EIU 2005). Interest in BMs emerged largely as a consequence of the advent of the Internet and

the associated information and communication technologies in the 1990s, because this created new opportunities and challenges for value creation and capture (e.g. e-commerce) (Lecocq et al. 2010; Wirtz et al. 2016), but attention towards the BM outlived the ‘dot-com bubble’ (DaSilva and Trkman 2014, p. 381).

A measure of the level of interest is that various special issues of academic journals have been devoted to BMs between 2010 and 2015 (e.g. *Harvard Business Review*; *International Journal of Innovation Management*; *Long Range Planning*; *R & D Management*; *Strategic Entrepreneurship Journal* and *Strategic Organization*). Nonetheless, the lack of clarity concerning circular BM comes as no surprise placed in the context of the BM literature. At the turn of the century, Porter (2001) argued that ‘the definition of a business model is murky at best’ (p. 73) and ten years later, Zott et al. (2011) suggested that there had been little change claiming that ‘researchers frequently adopt idiosyncratic definitions that fit the purposes of their studies but that are difficult to reconcile with each other’ (p. 1020) and frustrated, that ‘the term business model in its current use is not one concept; it is many concepts’ (pp. 1034–1035). This is confirmed by more recent studies with Wirtz et al. (2016) arguing that the BM term is not always applied in a coherent manner but rather is used interchangeably with other terms like ‘business idea’ or ‘revenue model’. However, authors in the BMs literature seem to have found some accord on ‘value’ as an important element to understand the BM concept. Notably, Zott et al. (2011) argue that BMs ‘seek to explain both value creation and value capture’ (p. 1020). Teece (2010) describes a BM as ‘the design or architecture of the value creation, delivery and capture mechanisms employed. The essence of a business model is that it crystallizes customer needs and ability to pay, defines the manner by which the business enterprise responds to and delivers value to customers, entices customers to pay for value, and converts those payments to profit through the proper design and operation of the various elements of the value chain’ (p. 191). Osterwalder and Pigneur (2010) view the BM as ‘the rationale of how an organization creates, delivers, and captures value’ (p. 14) and propose an extensive BM framework, which they call ‘canvas’, based on the following nine dimensions: *customer segments*, *value propositions*, *channels*, *customers’ relationships*, *revenue stream*, *key resources*, *key activities*, *key partnerships* and *cost structure*. Richardson (2008) proposed a simpler yet explanatory BM framework grounded on ‘value’ and comprising the ‘value proposition’ to the customer

Table 3.1 The BM concept in the BM literature

<i>The BM literature is relatively recent (can be traced back to the 1990s)</i>	
The business model	‘Value’ is a key theme in the BM literature: the BM as ‘the rationale of how an organization creates, delivers and captures value’ (Osterwalder and Pigneur 2010, p. 14); the BM ‘describes the design or architecture of the value creation, delivery and capture mechanisms employed’ (Teece 2010, p. 191); BMs as means to create and capture value (Zott et al. 2011); BM frameworks are centred on value, e.g. Richardson’s (2008) framework includes value proposition, value creation and delivery, and value capture

(customers’ offering), the ‘value creation and delivery’ (how value for customers is created and delivered and thus including resources and capabilities, activity system and supply chain) and ‘value capture’ (reflecting a firm costs and revenues structure and flow). Table 3.1 summarises the key findings concerning the BM concept in the BM literature.

Next, a review of the academic, practitioner and grey literature which has given attention to BM innovation in the context of the CE is presented.

3.3 CIRCULAR BUSINESS MODELS: STATE OF THE ART IN THE CURRENT LITERATURE

The emphasis on new BMs or the transformation of existing ones, is understandable when placed in the context of the CE proposition. Its implementation would affect all the elements of the BM framework, namely value proposition, value creation and delivery and value capture as the following example illustrates. In circular modes of production and consumption, products with a medium to long life cycle (e.g. domestic appliances) need not follow the conventional sale transaction but instead be leased or accessed under pay for use mechanisms, i.e. customers pay for the right to use the product over a long period of time, with payment related to performance (EMF and McKinsey 2012; Lacy and Rutqvist 2015). Under this system, producers preserve the ownership of the product and are responsible for providing maintenance over time, which provides an incentive for designing more durable products (Hawken et al. 2000). Producers could benefit from reduced primary materials costs (products are returned to the manufacturer at the end of their useful life and thus secondary raw materials can be recovered),

and from long-lasting relationships with customers (*ibid.*). They, in turn, can rely on a flow of performances without capital expenditure on expensive goods (*ibid.*). Clearly, there is a new value proposition under this system (e.g. with access over ownership customers' value increases) and so it is for the value creation and delivery (e.g. capabilities in maintenance and repair; customer relationships need to be developed) and value capture (e.g. revenues derive from selling services rather than goods; potential reduced costs). *Bundles*, a Dutch start-up, offers its customers the service of having their clothes washed instead of selling washing machines via supplying smart appliances that are connected to the internet and with fees charged on a pay per wash basis (EMF 2017a). *Bundles* install only machines that are durable and made of components that are recyclable at the end of life so that when these are returned they can be repaired and refurbished and enter a next cycle of use (*ibid.*).

The importance of new BMs for a CE is frequently cited in early practitioner literature, but there are only hints on their possible nature. There is nonetheless an understanding that some will be performance-based payment models, rather than the normal (consumer) ownership models, which are conducive to designing products for longevity and reuse (EMF and McKinsey 2012). More recently, a set of measures that could be implemented to pursue BM innovation in accordance with the CE principles outlined in Chapter 2, has been proposed under the nomenclature of the 'ReSOLVE' framework (EMF et al. 2015). These measures are: 'Regenerate, Share, Optimise, Loop, Virtualise and Exchange—together, the ReSOLVE framework' (EMF et al. 2015, p. 25). *Regenerate* demands a shift towards renewable materials and sources of energy as well as investments in natural capital along returning back to nature renewable materials. *Share* refers not only to the possibility of a shared utilisation of goods among users but also to the maximisation of resources use along the product life cycle through for instance reuse, increased durability and design for repair/upgrade. *Optimise* involves improving products and processes efficiency. *Loop* implicates closing production loops via returning technical materials to use (e.g. repair, remanufacturing, recycling) and renewable materials to cascading usage and ultimately to nature. *Virtualise* refers to the possibility of delivering utility in the absence of physical products (e.g. online music, books) and *Exchange* relies on the use of innovative technologies and materials enabling more resource-efficient industrial processes. Table 3.2 contains a selection of business innovations based on CE principles.

Table 3.2 Examples of business innovations based on CE principles

Active Disassembly designs products using materials that can be recovered and dismantled at the end of product life cycle in a non-destructive way

(Exchange)

Airbnb enables homeowners to rent spare bedrooms to travellers

(Share)

British Sugar converts waste and emissions deriving from its core sugar production into inputs for new products lines (e.g. animal feed, betaine for the cosmetics industry, bioethanol, soil conditioner)

(Regenerate, Loop)

Caterpillar, the manufacturer of machinery for the construction industry, produces heavy machinery that is suitable for remanufacturing, repairing and upgrade

(Share, Loop)

Daimler, the German automotive manufacturer, launched Car2go in 2008. This service enables customers' access to a car which can be located, reserved and accessed by phone, website and mobile app. Users pay for the time travelled with no additional fees for deposit, parking or fuel

(Share, Exchange)

Desso has established a take-back programme for its carpets and products containing recyclable yarn that can be used over and over again without losing its quality

(Loop, Optimise)

Ecovative produces packaging products from agricultural waste. This packaging is compostable at the end of its useful life and performs the same as packaging materials derived from synthetic sources

(Regenerate, Loop, Exchange)

FLOW2 is a business-to-business asset sharing virtual platform where businesses can share equipment as well as skills

(Share, Optimise)

Girl Meets Dress™ enables customers to rent designer dresses and accessories

(Share)

Interface, the leading manufacturer of carpet tiles, reuses the nylon recovered from fishing nets abandoned in the oceans to produce one of its carpet tiles collections

(Exchange)

Michelin, a leading tires manufacturer, through its tires as service model, allows fleet customers to lease instead of purchasing tires. Consequently, customers do not own the tires and the contract is based on a pay per mile fee. *Michelin* provides maintenance as well and collects back worn-out tires which can be reprocessed into feedstock for the manufacturing of new tires or something else

(Share, Loop)

Miele designs washing machines lasting longer (about 20 years) than the average lifespan of a washing machine (10 years). Products are also designed for upgradability

(Share, Loop)

Mud Jeans allows its customers to lease instead of buying organic cotton jeans over the payment of a monthly fee, and at the end of their useful life they can be converted into new denim

(Share, Loop)

Marks & Spencer, a leading UK's retailer, collaborates with Oxfam, a not-for-profit organisation, to facilitate recycling of used Marks & Spencer's clothes, shoes and bags. These items can be brought into Oxfam stores where customers receive a voucher that can be spent in Marks & Spencer's stores. The collected items are either resold or recycled and the money raised is donated to Oxfam in support of its work

(Share, Optimise, Loop)

(continued)

Table 3.2 (continued)

Philips, the global manufacturer of consumer electronics (e.g. light bulbs and healthcare equipment), has launched lighting as service. Under this system, customers do not own the lighting equipment but they have access to it and they are charged on the basis of usage

(Share, Exchange)

Patagonia designs sport clothing that lasts longer, is suitable for repair and recycling at the end of its useful life

(Share, Loop)

Rolls-Royce, which designs and manufactures power systems to be used in air, on land and at sea, introduced Power-by-the-Hour™ in 1962. This system offers access to jet engine, monitoring in use, maintenance and accessory replacement on a flying per hour basis

(Share)

Splash sells very innovative household cleaning products. The company initially provides customers with a ‘one-off starter box’ which contains a range of bottles, each filled with a sachet of concentrated liquid that can be used to prepare detergents at home. Bottles can be used over time which contributes to reduce packaging waste, and new sachets when needed are ordered and delivered by post

(Share, Optimise, Exchange)

Spotify sells and delivers music online

(Virtualise)

Timberland, a leading manufacturer and retailer of outdoors wear, produces walking boots (Earthkeeper®) that are suitable for disassembly and incorporate components (e.g. rubber outsole, lining and laces) made from recycled materials

(Share, Exchange, Loop)

TurningArt, enables individuals to rent rather than own art. It also allows art inventory that is not in use to be placed on the market

(Optimise)

Xerox does not sell printers but rather printer services and its printers are designed so that at the end of their useful life they can be remanufactured

(Share, Loop)

Each example is placed in relation to the measures in the ReSOLVE framework (EMF et al. 2015). The examples are taken from relevant literature (Bocken et al. 2016; EMF 2017a; Lacy and Rutqvist 2015; WRAP 2017a). The association between each example and the measures in the ReSOLVE framework is done by this author.

The ReSOLVE framework is valuable in proposing a set of measures suggesting how to align a BM to the requirements of a CE, but it does not define what a circular business model (CBM hereafter) is. This is why a search of the academic literature was employed to find a conceptualisation of the CBM using bibliometric methods, a growing research method within the domains of Management and Organisation Studies to perform literature search (Zupic and Cater 2015). Bibliometric research is used for the ‘description, evaluation, and monitoring of published research’ (ibid., p. 430). The academic literature review was performed with the academic databases Scopus, ProQuest Business Collection,

EBSCOhost and Web of Science, using ‘circular economy and business models’ and ‘circular business model’ as keywords. Only specific CE terminology was used to find a conceptualisation of the CBM. The CE thinking as such is new though the ideas behind the CE propositions are not and the CE literature needs clarity as outlined. Therefore, to avoid confusion with concepts developed in fields that are linked to the CE literature and to find a definition of BM specific to the CE context, alternative keywords (e.g. sustainable business models) were not used. The suitability of the approach taken can be further justified if we consider that ‘the notion of sustainable business model is often used in an inconsistent way’ (Lüdeke-Freund and Dembek 2017, p. 1669) and that very recent CE review studies support the same perspective recognising the importance of clarity (D’Amato et al. 2017; Geisendorf and Pietrulla 2017). The literature search was conducted in August 2017 and only publications written in English were considered. Table 3.3 summarises the results obtained from the academic literature search.

The relevant titles of peer-reviewed publications were subsequently processed to find a conceptualisation of the CBM, which led to the reading of articles abstracts and main text. Only one academic article (Linder and Williander 2015) contains a conceptualisation of the CBM which will be explored in the subsequent sections of this paragraph. Therefore, to conduct a more comprehensive literature search, the grey and practitioner literature were also included in addition to the originators of the CE thinking. The grey and practitioner literature was manually searched starting from the websites of well-known organisations that have been involved in the production of reports and other publications on the CE

Table 3.3 Results of the academic literature search

<i>Academic databases</i>	<i>Number of publications</i>
<i>‘Circular economy and business models’ as keywords</i>	
Scopus	10
ProQuest business collection	5
EBSCO	5
Web of science	5
<i>‘Circular business model’ as keywords</i>	
Scopus	13
ProQuest business collection	5
EBSCO	7
Web of science	8

and it included publications that were referenced in the sample initially reviewed. In this case, only publications written in English were reviewed too. Overall, the comprehensive literature review reveals: (a) the availability of different constructs that in some cases are directly conceptualised as CBMs archetypes, categories, frameworks, elements, canvas and strategies and in other cases are classified by this author as CBMs elements/categories; (b) an almost inexistent definition of the CBM. An overview of the different constructs available in the literature is presented in Table 3.4.

As Table 3.4 shows, CBMs elements, categories, archetypes, strategies, framework and canvas are developing within academic and practitioners' studies. Though there is some overlapping between the constructs presented in Table 3.4, they are valuable because they offer some guidance towards actual configuration of CBMs. However, the academic literature and the business community would benefit from a more systematic conceptualisation of the CBM. Zott et al. (2011), in their extensive review of the BM literature, lamented a missing definition of the BM concept in several publications and warned that this is not beneficial to advance understanding and research on the topic. Zott and colleagues' findings in the BM literature show similarity with the characteristics of the CE literature produced to date whereby there seems to be a proliferation of different constructs (categories, canvas, elements, archetypes, strategies, frameworks for CBMs) in the absence of a common ground elucidating what the CBM refers to in the first place, with potential negative implications for research and implementation. Therefore, conceptualising the CBM not only adds to the CE literature where CBMs are investigated marginally (Antikainen and Valkokari 2016; Blomsma and Brennan 2017; Lewandowski 2016; Lieder and Rashid 2016) but also provides a unifying frame of reference to develop further comprehension of the CBM concept and thus contributing to the much-needed clarity and theory building in the CE literature. In addition, clarity in relation to what a CBM refers to is beneficial to implementation within the business community.

Very little in terms of CBMs conceptualisation in the academic literature has been published to date, with Linder and Willander's (2015) study as the one exception. They define the CBM as 'a business model in which the conceptual logic for value creation is based on utilizing economic value retained in products after use in the production of new offerings. Thus, a circular business model implies a return flow to the

Table 3.4 CBMs archetypes, canvases, categories, elements, frameworks and strategies

<ul style="list-style-type: none"> • <i>Performance/usage-based payments models</i> (leasing, hiring); • <i>Product-service systems</i> (a combination of products and services) • <i>Usage-based service</i> (leasing or renting); • <i>Result-based integrated solutions</i> (value proposition as a combination of products and services) • <i>Product-service systems</i> (a combination of products and services); • <i>Dematerialised service</i> (e.g. accessing music online); • <i>Hire and leasing</i> (hire or leasing instead of purchasing an item); • <i>Collaborative consumption</i> (e.g. car sharing, home sharing); • <i>Incentivised return and reuse</i> (customers are encouraged to return back a product at the end of its useful life for an agreed amount of money. The product is then recycled or refurbished); • <i>Asset management</i> (improving efficiency in the usage of equipment so that for example, when this is not in use it can be leased to other businesses); • <i>Collection of used products</i> (products are collected back at the end of their useful life by a service provider and are then directed to recycling/refurbishing/remanufacturing/reusing); • <i>Long life</i> (products designed to last for longer); • <i>Made to order</i> (over-stocking of products is avoided); • <i>Bring your own device</i> (e.g. employees are provided with one computer to use at home and at work and this is useful in reducing the quantity of products needed to satisfy a need) • <i>Incentivised returns</i> (customers are encouraged to return a product at the end of its useful life over the payment of an agreed amount of money. Returned products can then enter reuse/refurbish/remanufacture/recycle routes); • <i>Hire and lease</i> (customers are allowed to rent a product over a short period of time or to lease it over a longer period) • <i>Circular supply chain</i> (renewable or recyclable inputs to production processes); • <i>Recovery and recycling</i> (material/energy recovery from products at the end of life); • <i>Product life extension</i> (repairing, upgrading, remanufacturing, extended product durability and refurbishing); • <i>Sharing platforms</i> (collaborative consumption); • <i>Product as a service</i> (leasing rather than selling) • <i>Slowing loops</i> (access and performance model; extending product value, i.e. recovering the residual value of products; long life; encourage sufficiency, i.e. reduced consumption through product durability, upgradability); • <i>Closing loops</i> (extending resource value, i.e. wasted materials are recaptured for the production process; industrial symbiosis, i.e. waste from one company feeds another company's production process) • <i>Loop 1</i> (reusing, repairing, remanufacturing, technological upgrading); • <i>Loop 2</i> (recycling production waste and end of life products; natural cycles, i.e. using biomass as a renewable energy source such as biodiesel from plants) 	<p>CBMs elements (EMF and McKinsey 2012)</p> <p>CBMs elements/ categories (Sempels 2013)</p> <p>CBMs elements/ categories (WRAP 2017a)</p> <p>CBMs elements/ categories (Aldersgate Group 2015)</p> <p>CBMs elements/ categories (Lacy and Rutqvist 2015)</p> <p>CBMs strategies (Bocken et al. 2016)</p> <p>CBMs elements/ categories (Stahel 2006)</p>
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Table 3.4 (continued)

<ul style="list-style-type: none"> • <i>Product design</i> (products are designed to support end of life strategies, i.e. reuse/recycle/repair/refurbish); • <i>Service- and function-based models</i> (services enabling connection between overstock products and potential users are provided, e.g. food banks); • <i>Collaborative consumption</i> (platforms enabling access to second-hand products, swapping and borrowing goods); • <i>Reuse</i> (second-hand/refurbished products are marketed); • <i>Repair</i> (products are repaired and remarketed at the end of their useful life); • <i>Recycling and waste management</i> (sorting and recycling services) 	CBMs elements/ categories (Norden 2015)
Building blocks of a CBM:	CBM canvas (Lewandowski 2016)
<ul style="list-style-type: none"> • <i>Value propositions</i>; • <i>Customer segments</i>; • <i>Channels</i>; • <i>Customer relationships</i>; • <i>Revenue streams</i>; • <i>Key resources</i>; • <i>Key activities</i>; • <i>Key partnerships</i>; • <i>Cost structure</i>; • <i>Take back systems</i>; • <i>Adoption factors</i> 	
<p>The author considers the elements of the Osterwalder and Pigneur's (2010) BM canvas, in addition, to take back systems and adoption factors as constitutive elements of the CBM canvas</p>	
<ul style="list-style-type: none"> • <i>Value propositions</i>; • <i>Customer segments</i>; • <i>Channels</i>; • <i>Customer relationships</i>; • <i>Revenue streams</i>; • <i>Key resources</i>; • <i>Key activities</i>; • <i>Key partnerships</i>; • <i>Cost structure</i>; 	CBM canvas (EMF and IDEO 2017)
<p>The CBM canvas is built on Osterwalder and Pigneur's (2010) BM canvas and incorporates questions that prompt thinking about actual design of a CBM</p>	
<ul style="list-style-type: none"> • <i>Circular supplies</i> (waste from one process used as feedstock for a different one); • <i>Resource value</i> (the residual value of used resources is recovered and used into new materials); • <i>Product life extension</i> (enhanced product durability); • <i>Extending product value</i> (products are offered on a leasing basis to retain ownership and, therefore, benefits are accrued from the residual productivity of resources); • <i>Sharing platforms</i> (utilisation of products is increased via sharing) 	CBMs archetypes (Moreno et al. 2016)
<p><i>Solutions-based business models</i> (customers' needs are satisfied through a flow of performances)</p>	CBMs elements/ categories (Lovins et al. 1999)

(continued)

Table 3.4 (continued)

<p>The authors consider the elements of the Osterwalder and Pigneur's (2010) BM canvas in addition to drivers, stakeholders' involvement and sustainability impacts as constitutive elements of a framework for CBM innovation</p> <p><i>Short cycle</i></p> <ul style="list-style-type: none"> • <i>Pay per use</i> (one-off payment to access product use); • <i>Repair</i> (repair services to extend product lifetime); • <i>Waste reduction</i> (waste is reduced in the production process); • <i>Sharing platforms</i> (shared consumption); • <i>Progressive purchase</i> (over time small payments before purchase) <p><i>Long cycle</i></p> <ul style="list-style-type: none"> • <i>Performance-based contracting</i> (the manufacturer is responsible for the performance of the product over its entire life cycle); • <i>Take back management</i> (incentives are in place to ensure that products go back to the producer at the end of their life cycle); • <i>Next life sales</i> (products enter a new production process and then sale); • <i>Refurbish & resell</i> (products are refurbished and sold again) <p><i>Cascades</i></p> <ul style="list-style-type: none"> • <i>Upcycle</i> (materials value is upgraded and they are reused); • <i>Recycling</i> (waste handling and repurpose) (materials are cascaded across different usage); • <i>Collaborative production</i> (cooperation in the supply chain leading to closed-loop production chains) <p><i>Pure circles</i></p> <ul style="list-style-type: none"> • <i>Cradle-to-cradle®</i> (design products to attain fully circular material loops); • <i>Circular sourcing</i> (only materials and products that are fully circular are sourced) <p><i>Dematerialised services</i></p> <ul style="list-style-type: none"> • <i>Physical to virtual</i> (moving from physical to virtual products); • <i>Subscription-based rental</i> (product use over the payment of periodic fees) <p><i>Produce on demand</i></p> <ul style="list-style-type: none"> • <i>Produce on order</i> (production is on demand); • <i>3D printing</i> (3D printing is used to reduce waste); • <i>Customer vote (design)</i> (consumers are demanded to vote on which product to manufacture) 	<p>CBM categories (Van Renswoude et al. 2015)</p>
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producer from users, though there can be intermediaries between the two parties. The term circular business model, therefore, overlaps with the concept of closed-loop supply chains, and always involves recycling, remanufacturing, reuse or one of their sibling activities (e.g. refurbishment, renovation, repair)' (p. 2). CBMs are regarded as tools for creating value through the circulation of materials and resources once conceived as waste at the end of life but there are also some shortcomings in this conceptualisation of the CBM. It does not make explicit links to all the BMs components. Value capture is not considered, and the description of value creation appears to be used as synonym for

value capture and as if containing elements of the value proposition dimension. In addition, this definition does not seem to fully acknowledge the implications for BMs deriving from other CE strategies. For instance, the *Loop*, *Optimise* and *Share* measures in the ReSOLVE framework are taken into account (i.e. by talking about refurbishment, renovation, repair) though there is no mention of increased product durability, but links to *Regenerate*, *Virtualise* and *Exchange* are missing. Moreover, Linder and Williander's (2015) definition blurs the concept of the CBM with that of closed-loop supply chains, a combination of forward supply chains (from producer to consumer) and reverse supply chains (from consumer to producer) enabling components and materials to enter again the production process (Wells and Seitz 2005). Closed-loop supply chains can be part of the value creation and delivery system but cannot be identified with CBMs and overlapping two different constructs does not contribute to clarify the meaning of the CBM in the first place. Therefore, how can a more structured conceptualisation of the CBM be built? The next paragraph proposes a detailed process that is conducive to the identification of a set of propositions ultimately leading to a preliminary conceptualisation of the CBM.

3.4 CIRCULAR BUSINESS MODELS: TOWARDS A CONCEPTUALISATION

It seems appropriate to arrange the conceptualisation of the CBM around 'value'. 'Value' is a central factor within the CE literature with the CE defined as 'an economy that provides multiple value creation mechanisms which are decoupled from the consumption of finite resources' (EMF et al. 2015, p. 23). The theme of 'value' is also pertinent within the BM literature where the BM concept is centred on 'value' and value related frameworks have been developed (e.g. Osterwalder and Pigneur 2010; Richardson 2008). Merging the 'value' dimension of the BM concept, as represented in the BM components (i.e. value proposition, value creation and delivery and value capture), with the implications for these components deriving from the application of CE principles, would lead to the identification of the qualifying features of the value proposition, value creation and delivery and value capture and thereby to the conceptualisation of the CBM.

A guiding tool for identifying the application of CE strategies in practice is the ReSOLVE framework (EMF et al. 2015), which is very useful since it groups under one umbrella a set of CE-related measures

reflecting CE principles (Regenerate, Share, Optimise, Loop, Virtualise, Exchange). To build the conceptualisation of the CBM is then necessary to choose a BM framework from the BM literature. Other studies (EMF and IDEO 2017; Lewandowski 2016) in the emerging CE literature shown in Table 3.4 have used Osterwalder and Pigneur’s (2010) extensive BM framework (based on nine dimensions) to propose CBMs canvases. However, an alternative and potentially more fruitful path is to build the conceptualisation of the CBM on Richardson’s (2008) BM framework. This is for two reasons. Firstly, Richardson’s framework is a simpler yet effective representation of the comprehensiveness of the BM concept (it includes only three dimensions, i.e. value proposition, value creation and delivery, and value capture). Secondly, this book aligns with the position of Zott and Amit (2013) who argued that using all-inclusive definitions of the BM concept makes it ‘very difficult to see what the business model is not and how it differs from the firm or the organization (or other levels of analysis) at large’ (p. 405). Figure 3.1 synthesises the process leading to the conceptualisation of the CBM.

This section now looks at the implications for the BM components deriving from the application of the CE principles. To begin with, CBMs challenge the nature of the *value proposition* (what is the customers’ offering?) in the sense that its main component is a service rather than a product (Sempels 2013). In addition, they offer significant advantages to end customers (EMF and McKinsey 2012; Lacy and Rutqvist 2015). Lacy and Rutqvist (2015) counsel that customers interested in the ecological performances of companies’ operations will be attracted by CBMs value propositions and that they will find products in CBMs as the same

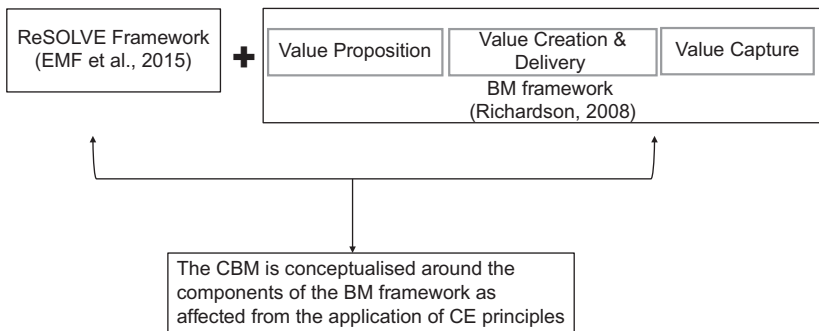


Fig. 3.1 The process to conceptualise the CBM

or better than those in linear BMs in terms of quality, price and performances. ‘They will see how trading ownership of products for access to them can translate into greater convenience, little concern over maintenance and repair, less clutter in their homes, and more money in their pockets’ (ibid., p. 25). They also add that it is in product use and after use that most of the customers’ value is created and, therefore, with circular strategies, it is possible to tap into these stages of a product life cycle creating additional value for the customers.

On a similar line, EMF and McKinsey (2012) argue that in a CE consumers benefit from (a) products that are designed for durability; (b) increased transactional options as products could be leased, rented, shared; and (c) products secondary benefits, e.g. packaging that can be used as a fertiliser. For instance, one way in which consumers’ benefits from circular strategies is the existence of recovery and recycling opportunities (e.g. send-back schemes; drop-off points) through which they can get rid of unwanted products (Lacy and Rutqvist 2015). *Ricoh*, the managed documents service provider, enables customers to send back used toner cartridges for free and has collection and treatment points where replaced components are managed for reuse and materials recovery (ibid.). *Marks & Spencer*, a leading UK’s retailer, collaborates with Oxfam, a not-for-profit organisation, to facilitate recycling of used *Marks & Spencer*’s clothes, shoes and bags. These items can be brought into Oxfam stores where customers receive a voucher than can be spent in *Marks & Spencer*’s stores. The collected items are either resold or recycled and the money raised is donated to Oxfam in support of its work (ibid.). *Miele* designs washing machines lasting longer (about 20 years) than the average life span of a washing machine (10 years). Products are also designed for upgradability (Bocken et al. 2016). *Splosh* sells very innovative household cleaning products. It initially provides customers with a ‘one-off starter box’ which contains a range of bottles, each filled with a sachet of concentrated liquid that can be used to prepare detergents at home. Bottles can be used over time which contributes to reduce packaging waste, and new sachets when needed are ordered and delivered by post with the convenience of the customers (EMF 2017a). *Pley*, a start-up based in California, enables parents to rent and return LEGO sets for their kids on a subscription basis (Fitzpatrick 2015). Hence, from the theoretical themes and corporate examples illustrating the features of the value proposition in CBMs, the first proposition towards the conceptualisation of the CBM can be inferred:

P_1 in CBMs value propositions are characterised by enhanced customers' value as a result of more comprehensive 'circular offerings' (e.g. products as services; greater convenience; dematerialised products; superior product durability and ecological performances; product upgradability; take-back schemes) and 'circular relationships' (access over ownership, e.g. leasing, renting, sharing).

The adaptation of existent resources or development of new resources and capabilities appear to be crucial for *value creation and delivery* (how value for customers is created and delivered?) (Lacy and Rutqvist 2015). This can involve: (a) the establishment and effective management of complex and collaborative relational structures with suppliers and customers among others to understand where and how value can be created; (b) sourcing and innovative design capabilities to ensure that primary materials used in the manufacturing process are fully recoverable, biodegradable and recyclable at the end of products useful life; (c) constant customers' engagement along the entire product life cycle to provide them with services and to enable product recovery at end of life; and (d) reverse logistics capabilities to enable the flow of products from downstream (consumers) back upstream (manufacturer) (ibid.). All of these capabilities emphasise the relevance of the extension of the traditional relational structures that characterise BMs for emerging CBMs. In addition, the value creation system of CBMs is more likely to be characterised by local/regional supply chains (De Angelis et al. 2017), because of the greater opportunities for closing material loops offered by reduced geographic barriers (WEF et al. 2014), and by the maximisation of resources value. Notably, four 'circles' that enhance material productivity are identified in CE literature, offering opportunities for a better competitive advantage versus linear models. These are: (i) *the power of the inner circle*—the less a product has to change in order to be reused, the greater the savings; (ii) *the power of circling longer*—the advantage from maximising the times a product can be reused, rather than made new from virgin materials; (iii) *the power of cascaded use*—the gain from continued recycling across the value chain; and (iv) *the power of pure inputs*—uncontaminated materials within a product make them easier to reuse, and so extends resource longevity (EMF and McKinsey 2012).

Braiform is one of the largest supplier of garment hangers in the world. Retailers collect the hangers and send them to distribution centres where these are sorted, packaged and distributed to garment manufactures for a new cycle of use. Crucial in the development of this BMs has

been the set-up of reverse supply chains (EMF 2017a). *Ananas Anam* has developed an innovative, natural and non-woven textile, made from the fibres of the pineapple leaves called Piñatex™. This textile can replace leather which is becoming scarcer and costlier, and finds application in fashion, furniture, car and aerospace industry (Ananas Anam 2017). Multiple forms of value also would seem to characterise CBMs value creation and delivery mechanisms, i.e. value for broader categories of stakeholders including the natural environment, communities and employees is provided (Lacy and Rutqvist 2015). In this respect, CBMs are attuned not only to mainstream BM literature that emphasises economic value creation only (Chesbrough and Rosenbloom 2002; Schaltegger et al. 2016) but also to the sustainable BMs literature that emphasises the importance of the simultaneous creation of environmental and social value too (Boons and Lüdeke-Freund 2013; Evans et al. 2017; Roome and Louche 2016; Stubbs and Cocklin 2008). The growing number of *Repair Café* worldwide, for instance, enables communities to reduce their environmental burden by offering them the opportunity to repair items (e.g. small domestic appliances) that otherwise are disposed because no one can fix them (*The Guardian* 2017). *Rubies in the Rubble* collects fruits and vegetables from supermarkets which would be otherwise discarded because of aesthetic reasons and surplus due to overestimated demand, and convert them into chutneys which are now sold across several supermarkets within the UK (Rubies in the Rubble 2017). This commercial initiative aligned with CE thinking contribute to mitigate negative environmental impacts in the food supply chain which are significant, with about 10 million tonnes of annual food waste produced in the UK only, 60% of which could be avoidable (WRAP 2017b). Another example is also pertinent in the context of significant amount of plastic becoming marine litter causing devastating impact on the marine ecosystem and biodiversity (Ten Brink et al. 2016). In relation to this, *Method*, teamed up with volunteers to collect plastic waste from the Hawaii's beaches. Working with a recycling organisation, *Envision Plastics*, it created bottles made with the collected plastics to be used for its cleaning products (Method 2017). Hence, the second proposition is as follows:

P₂ in CBMs value creation and delivery is characterised by diffused value creation, maximisation of resources value across the activity system, local/regional supply chains and boundary spanning relational competences for the adaptation or development of 'circular' resources and capabilities.

In relation to *value capture* (costs and revenues streams), CBMs can be characterised not only by a shift in the source of revenues (from sale to product use/access) but also by reduced costs from the recovery of materials that otherwise may be difficult and expensive to source because of price and resource supply volatility (EMF and McKinsey 2012; Lacy and Rutqvist 2015). Additional revenues streams from (a) selling by-products that are useful to enter cycles of production of third parties, (b) services offered to customers over the entire product life cycle and (c) turning waste into inputs for new products lines, are also likely (ibid.). *Caterpillar*, the manufacturer of machinery for the construction industry, produces heavy machinery that is suitable for remanufacturing, repairing and upgrade and incentivises customers to return used parts. This enables customers to obtain a discount on remanufactured components and *Caterpillar* to lower its costs while retaining control over products that are reaching the end of their useful life (Lacy and Rutqvist 2015). *General Motors* recycles 90% of its manufacturing waste and it generates \$1 billion in revenue annually from by-product recycling and reuse (ibid.). The start-up *Toast Ale* makes beer from surplus bread that would be otherwise wasted (EMF 2017a). Surplus bread is collected from bakeries, etc., and it is incorporated into the brewing process replacing about one-third of the malted barley that goes in the production of beer. This is not only a sound environmental and social business practice but it also makes business sense, as ‘there’s a good markup from grain to bread to beer’ (EMF 2017a, p. 1). Companies embracing circular principles in their BMs will experiment a diverse impact on their costs and revenues structures because of the characteristics of their own offerings and activity systems. Hence, the third proposition is the following:

P₃ *CBMs are characterised by idiosyncratic value capture mechanisms.*

The three propositions made, as the basis for a more distinct conceptualisation of a CBM are summarised in Table 3.5.

This preliminary definition of the CBM is based on secondary data derived from publicly available examples. Future studies could use primary data and test the validity of the conceptualisation presented here in empirical settings. The following sections provide some guidance on which sectors/companies to choose in future studies on CBMs. In relation to the selection of industries/sectors, EMF and McKinsey (2012) consider ‘medium lived’ products (e.g. washing machines, mobile phones, light commercial vehicles) as the ‘sweet-spot segment for

Table 3.5 Features of CBMs and conceptualisation

<i>BMs components</i>	<i>Qualifying features of BMs components in a CE</i>
Value proposition (Customers' offering)	P₁ : Enhanced customers' value as a result of more comprehensive 'circular offerings' (e.g. products as services; greater convenience; dematerialised products; superior product durability and ecological performances; product upgradability; take-back schemes) and 'circular relationships' (access over ownership, e.g. leasing, renting, sharing)
Value creation and delivery (How value is created and delivered)	P₂ : Diffused value creation, maximisation of resources value across the activity system, local/regional supply chains and boundary spanning relational competences for the adaptation or development of 'circular' resources and capabilities
Value capture (Costs and revenues)	P₃ : Idiosyncratic value capture mechanisms
<i>Circular business models are business models wherein enhanced customers' value is produced as a result of more comprehensive 'circular offerings' (e.g. products as services; greater convenience; dematerialised products; superior product durability and ecological performances; product upgradability; take-back schemes) and 'circular relationships' (access over ownership, e.g. leasing, renting, sharing). In circular business models diffused forms of value are created, local/regional supply chains are implemented, maximisation of resources value across the activity system is pursued, boundaries spanning relational competences for the adaptation or development of 'circular' resources and capabilities are developed, and idiosyncratic value capture mechanisms are observed</i>	

circularity' (p. 36). This is the case because they are made of different components and thus they offer the greatest opportunities for the application of CE principles (e.g. they are suitable for refurbishment and disassembly) (ibid.). Yet, the environmental impact of consumables (products with a shorter lifespan like textiles) could also be mitigated via the application of CE principles as EMF and McKinsey have rightly emphasised in a subsequent publication (i.e. EMF and McKinsey 2013). Major impacts are due to energy use, use of toxic chemicals, water and soil pollution in the case of textiles manufacturing (Allwood et al. 2006). Mitigation would be achieved if (a) their composition moves towards renewable materials that can be safely returned to nature at the end of their useful life with a restorative purpose and (b) different cycles of reuse are pursued

(e.g. used textiles can be recycled as filling for upholstery furniture) (EMF and McKinsey 2012). Therefore, selecting also textiles and clothing case studies is appropriate to show how the industry is mitigating its environmental impacts and whether it is taking into account the changing regulatory landscape within the EU, for example. Notably, the European Clothing Action Plan (ECAP), adopted in 2015, seeks to diminish the significant amount of waste resulting in clothing supply chains across Europe and to reduce by 90,000 tonnes clothing waste sent to landfill and incineration by 2019 (ECAP 2016). In line with the EU's plan, the EMF in cooperation with the textile industry stakeholders, is currently involved in the *Circular Fibres Initiative* to identify what a circular global textile system could look like in addition to the steps necessary to move it away from the predominant linear operating model (EMF 2017b). In terms of the size of the business, it would be pertinent to focus on SMEs for academic and practical reasons. Notably, there is little understanding of innovation that addresses ecological and social concerns within SMEs to date (Halme and Korpela 2014) and SMEs account for 99% of EU's businesses and for more than half of the EU's GDP (EC 2013).

With regard to the research method, exploratory, multiple, qualitative case studies showing how CE principles are implemented in the business context would seem appropriate. Business and Natural Environment studies are characterised by the predominance of quantitative methods and, at the same time, by the quest for more qualitative approaches to gain a better comprehension of the phenomenon under investigation (Hoffman and Bansal 2012). CE implementation and CBMs are investigated only marginally within academic literature (Jurgilevich et al. 2016; Lewandowski 2016; Lieder and Rashid 2016; Murray et al. 2015; Witjes and Lozano 2016). Therefore, the case study approach which is suitable when 'a how or why question is being asked about a contemporary set of events over which a researcher has little or no control' (Yin 2014, p. 14), is suited to CBMs studies. Within the domain of qualitative enquiries, looser and structured research designs are both appropriate (Miles and Huberman 1994). In the former case, the conceptualisation of the CBM can be constructed more inductively and emerges from the empirical context. In the case of a more structured research design, some conceptual frameworks can be introduced earlier in the research process and are used to guide the data collection and analysis. This book has employed the ReSOLVE framework (EMF et al. 2015) and Richardson's (2008) BM framework to conceptualise the CBM. However, as Table 3.4 shows

there are additional constructs in the academic and practitioner literature that could be used to develop the CBM conceptualisation and alternative BMs framework are also available (e.g. the BM canvas by Osterwalder and Pigneur 2010). Cases would be selected employing a purposive rather than random logic, which accords with the nature of qualitative enquiries (Miles and Huberman 1994). This means that they are chosen because considered relevant to the research design (Guest et al. 2006). Reputational case selection (LeCompte et al. 1993, p. 76) can be applied, meaning that the cases are selected because recommended by an expert in the area. Comparable case selection (LeCompte et al. 1993, p. 78) could be applied too to favour comparability across cases.

3.5 SUMMARY

This chapter has reviewed the BMs and CBMs literature before outlining a set of propositions conducive to a preliminary conceptualisation of the CBM. This is one of the most relevant elements of novelty that this book brings to the emerging CE literature. Notably, although the CE term has become fairly widespread in use, there is a need for more clarity and convergence within the CE terminology. This book contributes to conceptual clarity by defining the CBM which, to the best of this author's knowledge, is almost inexistent from the literature wherein it is possible to identify mostly CBMs archetypes, categories, elements, framework, canvases and strategies. This is useful not only to facilitate theory building and thus as a reference point from which future studies could develop but also to clarify the concept of the CBM to management practitioners. BM innovation is a crucial constituent of the transition towards a CE and, therefore, it is important that a clear and consistent message on its key meaning is given to the business community so that scaling it up is quicker. In this respect, not only is that the articulation of the CBM provides conceptual clarity but also that it is built around 'value', and, therefore, it is attuned to the language of the business community whose engagement the CE framework seeks to achieve, and builds on scholars' recommendations on how best attract the interest of the business community. Walter Stahel, the founder of the *Product-Life Institute* in Geneva and the author of the *Performance Economy* which, as seen, is considered as one of the originators of the CE thinking, once commented: 'I have never been a fan of what's known as the 'zero waste movement', because in the western world, 'zero' is not

really a motivating goal. A better way is turning it around so instead of talking about zero waste in a factory, you talk about 100% yield. Your shareholders expect you to turn one tonne of materials into one tonne of products that you can sell, so talk about the concept of 100% yield to any western managers and they will immediately see the challenge' (Edie Newsroom 2017, p. 1). This chapter has also given some suggestions for future research wishing to investigate the topic of CBMs. Particularly, it has emphasised which industries and companies could yield more significant results and, therefore, contributing to additional academic and practical relevance. In the next chapter, further insights into the literature on CBMs are added, particularly in relation to their theoretical foundations.

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