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Review

A Definition and Theoretical Review of the Circular Economy, Value Creation, and Sustainable Business Models: Where Are We Now and Where Should Research Move in the Future?

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Received: 27 June 2018; Accepted: 3 August 2018; Published: 7 August 2018

Abstract: This paper contains a theory review of value creation and the implementation of next-generation sustainable business models to profit in the circular economy. While previous research has pointed to the influence of society and regulatory policy on companies' ability to address larger sustainability concerns and to change their ways of working, the field suffers from little theoretical guidance outlining how undertake circular business mode transformation in practice. By reviewing the field's main theories, we illustrate significant implications for how future research can study profitability and competitiveness in the circular economy. This paper introduces the central components of circular business models and discusses links to contingency theory, transaction cost theory, resource-based theory, theory on networks and industrial economics, and agency theory. Understanding the circular economy and the ways companies can compete in the circular economy based on these theories is important for establishing important new research directions for scholars of sustainable business and circular business models.

Keywords: circular economy; review; definition; sustainability; business models; value creation; future research

1. Introduction

The circular economy is a timely and highly relevant topic. The idea behind the circular economy is that companies have a responsibility to uphold the environmental and sustainable values of society and must respond to a broad set of stakeholders rather than just their closest shareholders. This idea has resulted in research into ways management can expand and rethink the traditional make-use-dispose business model [1,2]. Despite criticism of this view and debate over whether it is realistic to expect companies to venture beyond shareholders' interests when designing their business models to close resource loops and achieve the complete cycling of materials [3–6], an increasing number of scholars and practitioners are hopeful that such a transition can address what is perhaps the greatest challenge currently facing society [7,8]. Recently, discussions about the importance of the circular economy have evolved. The focus of these discussions has shifted away from simplistic arguments about why the

circular economy is good toward understanding more theoretically sophisticated justifications for the financial outcomes of implementing circular business models. This shift is important. The field of business management and the circular economy lacks accepted theoretical perspectives that are substantial enough to outline and analyze empirical evidence and align discussions in the strategy, organization, and management literatures.

The scholarly study of management may be poorly integrated with the circular economy because the concept of the circular economy is rooted in web-articles and text books [9,10] rather than peer-reviewed scientific work [11]. The circular economy has received the most attention in disciplines, like industrial ecology [12,13], production economics [14,15], and operations research [16,17]. Thus, the scientific literature on the circular economy has been developed through research conducted outside the management and organizational theory tradition, with an overriding focus on problems, like waste management and recycling, that have traditionally been handled by non-profit organizations. A review of the literature reveals that few strategy, organization, or management scholars have employed the concept of the circular economy. These scholars have focused on describing different circular business models, circular business model innovations [18], and certain challenges and uncertainties that companies encounter when they adapt to the circular economy [3,7,19,20]. Also, research on related concepts, such as product-service systems [21–24], eco-efficient services [25–27], and business model sustainability [28,29], has discussed the business practice implications of the circular economy. However, the empirical evidence from research on the circular economy has not been analyzed or synthesized from a management or organizational theory perspective, which implies a limited focus on profitability and competitive advantage.

Indeed, recent reports have indicated that very few companies have managed to transform their businesses to compete with what is discussed in the circular economy literature [1,2]. So, why are firms unable to transform themselves to compete with business models that are based on the circular economy, and could such a transformation lead to differences in behavior and profitability? To stimulate research in this area, we first define and afterwards review what we know about the circular economy based on diverse literature perspectives. Based on these insights, we outline the fundamentals of circular business models and provide a range of perspectives to explain why circular business models can be profitable and how it can influence competitive advantages.

We explore our research question by acknowledging six theoretical perspectives to explaining differences in firms' behavior and the potential for economic returns and profitability: (1) Contingencies and the importance of firms' fit with the environment to exploit and create market opportunities from the circular economy [30,31]; (2) transaction costs and contracting between partners involved in creating the circular economy [32,33]; (3) differences in firms' resources and capabilities [34–36]; (4) differences in network position and path-dependence logics [37,38]; (5) industry and structural differences in terms of competition and barriers to entry [39,40]; and (6) agency issues, contractual design, and customer relationships [41,42]. We chose these perspectives because, together, they provide a holistic understanding of the challenges firms face when shifting from a linear to a circular business model and address value creation from different perspectives. Our goal is to provide a theoretical basis for expecting the circular economy and the implementation of circular business models to lead to differences in companies' economic returns. Thus, we go beyond the predominant focus of previous debates, which have centered on building a better world and a more sustainable environment.

2. Defining Circular Business Models and the Circular Economy

Definitions of what a business model is vary, but most agree that a business model describes how a company creates and captures value. The features of a business model define the company's customer value proposition and pricing mechanism, indicate how the company organizes itself and whom it partners with to produce value, and specify how the company structures its supply chain [43]. Zott and Amit (2010) conceptualize a business model as a system of interdependent activities that

transcends the focal firm and spans its boundaries [44]. The business model enables the firm, together with its partners, to create value and appropriate a share of that value.

During the last century, industrial and technological development, together with global trade, has resulted in enormous economic growth that has enhanced human welfare. However, this development path is rooted in exponentially increasing resource usage [8]. The circular economy is essentially an environmental change in response to the global need for an ecological economy, which requires human economic activities that are consistent with the three Rs principles: Reduce, reuse, and recycle [45]. The implication is that businesses must replace the linear take-make-waste model with a circular model based on reused, recycled, or repaired materials and products. In a circular economy, closed material loops are a prerequisite, which implies that materials are reused again as bulk material, products, or components [46]. Whenever feasible, reuse and remanufacturing are preferable to recycling for economic reasons because much of the value added in the original manufacturing process remains with the components [15,19,23,47]. Against this background, a circular business model is designed to create and capture value while helping achieve an ideal state of resource usage (e.g., finding a model that most closely resembles nature and comes close to achieving the complete cycling of materials). Accordingly, the goal of the business model shifts from making profits through the sale of products or artifacts to making profits through the flow of resources, materials, and products over time, including reusing goods and recycling resources. This reasoning implies that companies can reduce negative impacts on the environment by delivering and capturing value through this alternative value proposition. However, undertaking such ambitious transformation requires close collaboration and coordination between industrial network actors to achieve close or slow material loops. Based on these insights, we propose a circular business model definition to explain how an established firm uses innovations to create, deliver, and capture value through the implementation of circular economy principles, whereby the business rational are realigned between the network of actors/stakeholders to meet environmental, social, and economic benefits.

Laws have been introduced by, for example, the European Union (EU) and the Chinese government to stimulate a transition towards a circular economy [48]. In Europe, a Circular Economy Package has been approved in 2018 by the European Parliament that includes a range of policy measures and actions to reduce waste across Europe. For EU member states, targets have been set for the recycling of material, including packaging, plastic, wood, ferrous metals, aluminum, glass, paper, and cardboard [49]. Likewise, in China, a Circular Promotion Law has been passed in 2009 that promotes the efficient use of resources to protect and improve the environment [50].

3. Contingency and the Structural Influence of the Circular Economy and Circular Business Models

One perspective that can help elucidate the management challenges associated with implementing the circular economy builds on contingency reasoning [31,51], the conceptualization of environmental change, and the need for structural adaptation through a realignment to fit with the environment. Changing their business models is the main way companies manage alignment or realignment [43,52].

From this perspective, management and companies need to create or enhance value by configuring or reconfiguring new or existing resources [18,46,52]. Structural and contingency theorists acknowledge that companies routinely rethink how they bundle resources and constantly redistribute internal resources to become congruent with environmental requirements and conditions [30,51,53]. Typically, this requires a shift towards a circular business model, with high upfront investments and longer time horizons for revenue generation [19]. These requirements may challenge businesses because they may need large capital reserves to "wait for the money". Also, shareholder approval may be hard to obtain because this approach does not fit shareholders' short-term time horizons [46]. Studies have shown that while costly and risky implementation of circular economy principles are not being implemented, managers are intrigued by perceptions of growth potential [54], and an increased need to manage market turbulence [55–57] through the adaptation of circular business models.

A slow start to implementing a circular business model is inherent for established firms because of organizational inertia and resistance towards radical transformation. More specifically, whereas managers in firms that continue with the status quo of the linear model can plan and predict their futures based on historical data, for managers in firms transitioning to a circular business model, there is limited value in relying on historical data to make sense of the future. Consequently, managers struggle to imagine what doing business in the circular economy will look like. The limits of resource and energy use and the importance of viewing value creation in terms of closing loops (i.e., seeing the world as a "system" in which waste is minimized) lay the foundations of circular economy reasoning. The implications of this reasoning are significant: Many companies may need to change their entire value chain. In this context, one of the most complex challenges is establishing and organizing reverse value chain activities, which span all firm activities from product returns to the potential recovery of products' maximum value via recycling and upcycling activities. Therefore, companies are slow and managers are hesitant to make pioneering changes [14,16,18]. On the upside, shifting toward a circular model may offer enormous opportunities, including cost savings through waste reduction, better supply chain management, lower sensitivity to resource price volatility, and longer, better relationships with customers [1,2,18,19]. Shifting towards a circular economy also boosts innovation, creates jobs, and benefits the environment [8]. Accordingly, because structural alignment decisions are made by top management, top managers' creativity, capacity, and commitment are highly relevant factors for research examining the shift toward circular business models.

4. Transaction Costs and Contracting between Partners for Circular Business Models

The uncertainties surrounding the circular economy mean that companies risk experiencing high unforeseen contracting costs because they are unable to contract partners, lack the competence to formulate contracts that are detailed enough to secure their interests, or enter into contracts with too much complexity because they cannot visualize the challenges they will face during the transition. Accordingly, transaction cost theory [33] is useful to understand how partners and collaborators design contracts to ensure mutual benefits. Transaction cost theory can thus help us understand how companies can successfully close material loops and develop close collaborations. These close collaborations enable companies to deal with adaptation and pressures arising from sustainability concerns and increased environmental responsibilities together with partner companies in the value chain. Therefore, the degree to which companies can learn how to specify surrounding transactions [58], reduce high contract costs [59,60], and develop contracts that are specific enough for the circular economy can determine how successful they will be at creating value in these new economic conditions [61]. For management and business practice, it is essential to understand the whole potential supply chain as well as its parts (i.e., the individual companies and their relations) when implementing circular economy principles, such as recycling and extended sustainability services.

Changing from a linear to a circular business model, with increased efficiency, recycling, and sustainability, may require investment by all parties involved in a particular company's collaborative network. For example, the Danish brewery group, Carlsberg, has established such a collaborative network. Carlsberg has engaged its suppliers and partners in a circular alliance to develop sustainable packaging material that can be recycled and reused and to transform existing material to higher value material by removing chemicals and additives [62]. While Carlsberg is the driving force behind the transition to the circular model, its collaborators have specialized knowledge and resources that they bring to the alliance. Thus, responsibilities are divided among network actors. The Ball Corporation has expertise in cans, Arekema in glass bottle coating, O-I in glass packaging, RKW in shrink wrap, WestRock in paperboard multipacks, Petainer in Polyethylene terephthalate (PET) kegs, and the Environmental Protection Encouragement Agency (EPEA) in material assessment and cradle-to-cradle certification. As all the parties coordinate their efforts to achieve relationship-specific investments whose value depends on the success of the collaboration [33,63], this mutual commitment should reduce the risk of selfish behavior by parties in the alliance and alleviate firms' need to use safeguards

to protect their interests. Thus, circular networks can reduce the transaction costs that accrue from enforcing contracting and control mechanisms.

For manufacturers, the first step might be to redesign products so that they are suitable for remanufacturing [19]. Few products manufactured today are adapted for remanufacturing partly because of the optimization of the manufacturing process (e.g., products are designed to be assembled as quickly as possible without considering disassembly) [23]. Products should be designed with environmentally friendly raw materials, parts, and components, and product design should facilitate easy disassembly for reuse and recycling [64]. The importance of the design not only concerns the product's features, but also the minimization of energy and resource consumption during manufacturing [1,64]. According to the guidelines of the Ellen MacArthur Foundation, a core principle of the circular economy is that products should be designed in such a way that waste does not exist, which means that products should be designed and optimized for a cycle of disassembly and reuse [1]. Although manufacturers invest in product design, the natural implementation of the circular economy is that collaborators can participate in product life cycle analysis, which involves assessing products' environmental impact throughout the various stages of their life cycles. For this negotiation to be successful and for new contracts to be identified, it is important that collaborators' interests are aligned and that collaborators can overcome resistance to change.

For a manufacturer seeking to shift to the circular economy, it is important to convince and demonstrate to all companies involved that this shift will yield benefits. For the manufacturer, the capital tied up in physical investments, such as remanufacturing factories and facilities, involves considerable risk [65]. Because the upfront investments for product remanufacturing are considerable, larger firms with access to more resources are more likely to meet the criteria of the circular economy [19,64]. In addition, effectively addressing the challenges that may occur once a new circular business model is implemented will likely prove to be difficult because of contractual uncertainty. Parties that cannot stipulate all details in a contract may need to incorporate penalties or rewards to account for disturbances that may arise to avoid drawing up exhaustive contracts. Therefore, larger firms may have advantages in setting the contractual agenda and may participate in the most significant parts of the shift toward a circular business model. Compared to smaller firms, they are better positioned to orchestrate the activities required to attain system-level changes, make adequate investments in research and development (R&D), and influence policymakers to support the transition to a circular system through financial support and regulative measures [1,2]. While small and medium sized enterprises (SMEs) can enter the (often global) value chains and realize the benefits of the circular economy, they must meet the demands that larger companies specify in contracts [66,67]. However, because of the adaptive limitations of contracts, the uncertainty associated with the circular economy, and the difficulty of designing profitable circular business models ex-ante, a joint steering committee consisting of companies that have shared authority over a limited number of activities might offer an alternative when non-dominant companies are involved in creating new collaborative systems to implement a circular business model. Therefore, to understand the extent to which companies successfully change to circular business models, it is important to consider partner characteristics, contracting possibilities, and the ways companies adapt to uncertainty and prevent potential disputes through contracts and contractual devices.

5. Capabilities, Resource-Based Influences, and Circular Business Models

Companies adapt to changes in requirements, trends, and environments by reconfiguring their resource portfolios [34,35]. For years, scholars have shown that companies face difficulties in changing resource portfolios because their existing resources and capabilities limit directions for new resource investments [68]. However, for changes like the initiation of a circular business model and a regulatory shift toward the circular economy, resource-based theory posits that building and complementing a company's resource portfolio provides a sustainable advantage. This source of an advantage is important because a firm's management needs to constantly evaluate, measure, and reconfigure the

firm's resource portfolio in response to market and societal needs, social shifts, and technological advances [36]. A company can reconfigure its resource portfolio by adding resources [34], combining resources [69], or substituting new resources for old resources [36]. Uncertainty, high investment costs, and rigidities related to new resource investments due to the implementation of greater requirements drive resource investments and the growth of select resources within a company [68]. These are all important resources and capabilities that can be empirically studied and measured in the context of the circular economy.

Consistent with the magnitude of change, the few studies that have examined the circular economy have suggested that, to manage and overcome return flow challenges, manufacturers often need to rely on their partners' capabilities and resources [70]. The issue here is that the entire circular system may collapse if just one partner in a collaboration defects. This risk is particularly strong for business models that focus on: (1) Resource recovery through industrial symbiosis and closed-loop recycling (whereby waste material is reprocessed into new resources); and (2) product life extension through remanufacturing and reuse (whereas this risk is somewhat less of an issue in business models built around sharing platforms and selling products as a service where product ownership is retained) [71]. For a circular business model, several new types of resources and capabilities are needed that focus on the collection or sourcing of otherwise-wasted materials/resources to turn these materials/resources into new forms of value or that focus on designing long-lasting goods and extending the life of products. The difficulty for this model lies in predicting the return flows from customers, yet this information is crucial for ensuring that production capacity is optimal and that operations have a suitable amount of labor [19]. To alleviate this problem, firms may need to invest in tracking and tracing technology to gather information on the location and status of product returns and on the product life cycle [17]. Accurate information on the timing and quality of the product life cycle status or on returns is necessary for managing return flows, particularly when return rates are high or when life cycle contracts comprise the core of the value proposition [17]. To ensure high return rates, it is important to determine how used products should be collected and by whom as well as where collection points should be located to ensure customer coverage [72]. Although manufacturers often rely on collaborators and use third-party collection firms, they sometimes share the responsibility with these third parties, thereby highlighting the importance of high return flows. After used products are collected, recovery can simply involve reselling the products or can entail remanufacturing or recycling through a series of processes, such as collection, inspection, separation, and so on [73]. Therefore, for a circular business model to succeed, it is important that resource investments in financial, human, and physical resources are aligned with the information technology used in the reverse logistics process to improve partner communications, integrate information across the firm's activities, and improve responsiveness [65,74].

Several new types of resource investments may also be needed in other areas. In circular business models where product ownership is retained, customers only access the product at the time of purchase. This type of product-service offering consists of using the product or receiving the result of the product. Customers might, for instance, lease or rent physical products [23], such as when customers pay for access to a functioning bicycle [19]. The adoption of such models increases the importance of complementary services and resources to extend the life of the product. Many manufacturers employ independent service agents to carry out warranty servicing under a properly drafted contract [72]. This approach creates the possibility to invite collaborators to develop resources and thereby participate in the co-creation of value. After-sales services include installation, warranties, extended warranties, maintenance service contracts, provision of spares, training programs, and product upgrades [72]. When after-service activities are outsourced, manufacturers and service providers must align their interests. To ensure customer satisfaction, decisions regarding, for example, the location of repair centers and procedures to confirm that personnel who repair the products have sufficient training become necessary to guarantee that defects are repaired within a predetermined period. After-sales services are also important in situations in which products are disassembled

and usable elements are cleaned, repaired, and inventoried [18]. Recovered parts thus become an alternative to new parts [75]. Therefore, when investments are made to replace a linear business model with a circular model, it is also important for companies to consider the resource requirements that relate to after-sales services. Because these investments help ensure customer satisfaction and create long-term relationships involving periodic payments, they play an important role in making businesses sustainable. Accordingly, after-sales requirements must be integrated into the innovation process to ensure that planned product features enable professional after-sales services [18].

For businesses, the need for investment and adjustment to attain the closed material loop varies according to the nature of the business activity. As indicated earlier, manufacturers may need to make substantial changes to their products and manufacturing processes to meet the requirements of circular business models, whereas recycling companies often already meet these requirements without needing further changes [46]. However, for large manufacturing firms transformation towards circular business model requires significant changes and costs. This is because of the need to introduce radical innovations and disruptive business models to tackle current challenges and move toward the circular economy [7]. Several giant companies are in the process of switching their business models from linear to circular. For these global companies, it is important to have a reputation of being socially responsible and supporting "good" causes—something that is perceived as increasingly important among customers and other key stakeholders. By adopting the circular business model, these corporation can utilize sustainability oriented actions (e.g., redesigning product, using bio-based materials, increasing the life-time of a product, and adding recycling functionality) as measures towards achieving an improved reputation and increased revenues [76,77].

Examples of where giant companies pave the way towards a circular economy can be found. For example, H&M plans to rely 100% on recycled or other sustainably sourced materials to produce its garments, Coca Cola and Carlsberg are innovating by designing recyclable packaging materials for their products, DELL is initiating a large-scale computer equipment recycling and refurbishing program, and Phillips is shifting from selling lighting equipment as a product to selling lighting equipment as a service to retain product ownership and control. However, such transformations rely on system-wide innovations, so they can only be realized in conjunction with complementary innovations [7]. For example, for H&M to achieve its goal of closing the material loop in the fashion industry, it has to initiate within- and cross-industry collaborative actions. Therefore, it is supporting several startups. One of these, Re:newcell, has developed a production method that can turn used cotton and viscose into biodegradable pulp and is planning to set up a fabric-recycling factory. Another, Orange Fiber, uses the byproducts of citrus juice production to create new textiles. Finally, Sellpy is building an online marketplace for second-hand clothes. H&M is also working alongside the Hong Kong Research Institute of Textiles and Apparel to develop a chemical process to recycle cotton and polyester blends into new fabrics and yarns. H&M has also initiated a cross-industry collaboration with Danone's Indonesian drinks business, Tirta Investama. Tirta Investama collects used plastic bottles from the country's island district. These bottles are sorted, washed, and processed into flakes before being sent to one of H&M's textile partners. The bottles can then be transformed into socks, t-shirts, and jackets [78]. Although H&M drives these changes, a variety of actors must develop complementary innovations and make major efforts for the transition to a 100% circular fashion industry to materialize.

Accordingly, it is possible to study numerous examples of how new types of resource and capability investments are developed and potentially lead to sustainable competitive advantages despite the resource rigidities and uncertainty involved in transitioning to the circular economy. In this context, organizational inertia in the face of radical change toward a new circular business logic is likely [79]. Nevertheless, irreversible asset commitments [80], substantial investments in previous capabilities, and firms' fears of cannibalizing resource rents from existing business models [2,16] as well as outdated cognitive reasoning for constructing business models [81,82] are important mechanisms that must be studied to understand how resources are developed in association with the

implementation of circular business models. Therefore, further study of resource portfolio investments is needed to clarify how circular business models become profitable and competitive.

6. Network Influences and Circular Business Models

Networks have a potential dark side and may lock firms into unproductive relationships or preclude partnerships with other viable firms [37]. Thus, it may be difficult for a company to change from a linear business model to a circular business model if collaborators in its value chain are unwilling to make the required investments and adjustments. Hence, substantial switching costs might be involved in changing business models [32,83]. Creating a circular business model may be a first step to dissolving previous alliances. In some cases, this transformation requires companies to improve material selection and switch their current supply of inputs to nontoxic, pure, raw materials [2]. Accordingly, manufacturing companies' decisions regarding product design and material selection influence network partner selection. Biodegradable and recyclable materials that can be separated for reuse are prioritized to close the material loop.

As mentioned earlier, when a company shifts toward a circular business model, reverse logistics networks must be established. There are often substantial advantages for a manufacturing firm to outsource activities related to reverse logistics operations. Such operations can lead to alliances with collaborators that have developed the expertise, sophisticated logistics networks, technology, and capabilities to operate logistics systems efficiently [84]. For instance, the logistics service company, UPS Supply Chain Solutions, has benefited from manufacturers' decisions to set up reverse logistics chains. It provides repair services to the high-tech companies, Toshiba and Intermec, warranty parts recovery to General Motors, and transportation services to Nespresso's product take-back program. Therefore, manufacturers do not need to develop expertise in these areas; instead, they can rely on experts that specialize in these activities and may enjoy scale advantages from having contractual relationships with several manufacturers. This outsourcing contributes to the development of networks wherein dependencies are built between companies with respect to the resources and capabilities they possess. The mutual dependence and relationship-specific investments by companies within the network encourage trust, reciprocity, and information sharing [85,86]. Over time, companies develop knowhow from dealing with each other, which enables them to learn about collaborators' abilities. Therefore, it is reasonable to assume that network features, such as trust and close information sharing, will decrease contract-associated costs as new networks develop when companies implement circular business models in new value chains, alliances, and distribution networks.

7. Industry and Structural Influences and Circular Business Models

Implementing the circular economy implies forming new markets, with sustainability at the core. These markets can be understood as early-stage business environments where companies offer and compete with a new type of business model based on seeking profits from sustainable alternatives. These business models involve substantial uncertainty regarding profitability. The type of markets in which firms compete may have an unclear industry structure [3,87,88], unclear or absent "product" definitions [46], and a lack of logic to guide actions and identify appropriate behavior [19,89]. Thus, markets wherein circular business takes place can be considered unstructured settings with substantial risk and experimentation. In a setting lacking known guidelines and uncertainty regarding how offers should be executed, manufacturers and other actors entering this scenario are likely to form new kinds of industry relationships and partner with third-party providers.

Despite uncertainty surrounding the industry structures that emerge from disruptive sustainable innovations, some potential effects can be foreseen. One of the most prominent trends resulting from the transition to a circular business model is asset reuse and recycling. This reuse and recycling means that suppliers that provide so-called virgin materials must compete with suppliers that provide reused materials [90]. If the reused materials are just as valuable as the virgin materials or if they have a higher and more sustainable value due to upcycling, manufacturers will switch to the reused materials as long

as prices do not differ substantially. The presence of substitutes affects competitive intensity within an industry to the benefit of manufacturers, which have greater bargaining power [39]. If manufacturers' mission is to reduce waste, suppliers of virgin materials that do not adapt to the changing trends may struggle to prevail in the marketplace. In industries that are severely affected by challenges associated with resource scarcity and increasing demands, suppliers may have to increase the price of virgin materials. In the long term, minerals, metals, and energy sources need to be replaced with renewable alternatives.

For the sake of industry profitability and survival, it is of paramount importance that radical innovations contribute to solutions that ensure the steady supply of necessary materials. One example of such an innovation is the adoption of 3D printing technology in manufacturing. This innovation reduces waste by enabling manufacturers to employ a just-in-time versus just-in-case production model [90]. This development has led to demand-driven production, smaller batches, and a lower need for excess inventory, all of which reduce resource requirements [91]. The more optimal use of resources in manufacturing strengthens manufacturers' bargaining position in relation to material suppliers, and the shrinking demand for materials due to technological improvement lowers manufacturers' dependence on suppliers.

As mentioned earlier, the short-term immediate effect of the transition to circular business models is manufacturers' outsourcing of reverse logistics operations to third-party providers [18]. Services that are commonly outsourced to third-party logistics providers include transportation, warehousing, inventory, value-added services, information services, and supply chain reengineering. Differences in industry structures may affect the relationship between the manufacturer and these service providers. As suggested later in this section, the new types of industry structures, which are characterized by concentration and market power, influence network relationships, firms' positions in the network, and industry performance [37].

If a manufacturer's redesign of a product differentiates that manufacturer, collaborators in the reverse supply chain may be required to develop unique expertise to, for example, dismantle, inspect, and repair used products. In other words, the change from a linear business model to a circular business model may also require substantial investment by third-party service providers. For example, Mendtronix is a third-party service provider that has developed strong knowledge and expertise through investment in areas related to medical devices, marine technology, and digital signage. Its role is to inspect and repair used products for its clients. High investment requirements create barriers to entry, which restrict the number of potential collaborators that a manufacturer can choose from when establishing alliances. Thus, shifting to a circular system may result in industry structures with a high degree of concentration, meaning the industry is dominated by a fairly small number of actors in its early stages. In highly concentrated industries, it is important for network actors to build and maintain collaborative relationships because mutual dependencies are significant. Hence, the shift toward the circular economy may result in industries with strong interfirm ties between companies [37]. In this context, trustful behavior is likely to develop because the actors would be worse off if they behaved opportunistically [63,86]. Typically, high industry concentration with a small number of companies connected via a network of intrafirm ties tends to lead to high industry profitability [37,40]. Therefore, companies that tackle the challenge of conducting business in the circular economy by building strong, close positions in the new industries and markets that form are expected to be successful.

There are other significant differences in the implementation of the circular economy across manufacturing firms. In their circular designs, some manufacturers have emphasized modularizing their products and components to make it easier to disassemble and repair them for reuse [65]. This approach implies that firms use the same products or components across different product categories [18], thus leading to more homogeneous products. In this case, it is easier for manufacturers to find third-party service providers that can help disassemble and inspect used products because the requirements for doing so in terms of training, specific skills, and expertise are relatively low. This situation improves manufacturers' bargaining position in relation to such service providers

by reducing switching costs. Likewise, service providers' low investment requirements increase rivalry by making it easier for new actors to enter the industry [39,92]. Greater competition (implying lower concentration) among these firms enables manufacturers to occupy a central position in their strategic networks [37,38]. If manufacturers can change third-party providers relatively cheaply, relationships may become arms-length ties rather than relationally embedded ties [63,93]. However, for third-party service providers, the easier and faster processing of returned products due to increased modularization or standardization may provide opportunities to obtain scale advantages by serving several manufacturers, potentially leading to cost advantages. For example, mobile phone and computer manufacturers are increasingly relying on authorized third-party repair stores to ensure customers can get their devices repaired quickly. Entry into this market is rapid because the modular design of devices has made it easier, faster, and cheaper to refurbish them. It has been estimated that it takes 15 min to replace a screen on a mobile phone with a modular design versus 90 min to replace a screen on a regular phone [94]. For example, in its refurbishment program, Microsoft collaborates with a large network of small committed partners that repair products using Microsoft software, while Apple is making its repair machines available in 400 third-party repair shops [95–97]. However, this trend of products becoming easier to tear down for repair also implies new challenges for manufacturers. For instance, iFixit is a global community of people who help each other fix things themselves, including mobile phones and personal computers. Although iFixit is establishing partnerships with manufacturers, its presence in the market reduces the need for customers to rely on repair shops to get their electronic devices repaired. Another challenge with ease of repair is that individuals can open unauthorized repair shops that are not approved by or collaborating with manufacturers.

Thus, the trend seems to be toward increasing standardization in the form of modular device design, collaborative networks with small service providers, and online communities that help large manufacturers achieve environmentally friendly goals.

8. Agency Issues, Contractual Design, and Relationships with Customers

In traditional linear business models, the residual rights to a product that is purchased are transferred through ownership to the customer. These rights determine who decides how the product can be used [98,99]. The purchase contract, which details the customer's contractual rights, typically includes a warranty that gives the customer the right to have the product repaired within a limited period if it breaks down or is faulty. In contrast, in circular business models (e.g., models that focus on product leasing and renting), product ownership, and hence the right to decide on its use, is retained by the seller (i.e., the manufacturer or retailer), and the customer only obtains access to the product. Therefore, it is important to consider the design and structure of the contract between the seller and the buyer that stipulates how the customer can use the product and for how long. This shift toward control through specific contractual rights increases transaction costs [83,99].

For these types of contracts, the relationship between the two parties can be understood as an agency relationship. The seller (i.e., the principal) needs to ensure the customer (i.e., the agent) complies with the contractual terms so that the product is returned in good condition. According to agency theory, this relationship is characterized by information asymmetry because the seller cannot directly observe the customer's behavior. Besides stipulating the terms the customer needs to adhere to, a long-term contract typically specifies the need the product should fulfil and the value-added services required of the seller. These services may include installation, maintenance, training programs, spare parts, and program upgrades [72]. Therefore, the contract also obliges the seller to ensure customer satisfaction.

Agency theory posits that the agent—in this case, the customer—may misbehave by, for instance, inappropriately handling, damaging, or overusing product [41,100]. Risk is transferred to the seller, who owns the product, because this misbehavior makes it more difficult to reuse or recycle the product. Behavioral uncertainty, which increases the likelihood of misbehavior, is typically higher in business-to-consumer relationships than in business-to-business relationships. In business-to-business

relationships, reputation risks may prevent firms from violating contractual agreements, whereas in business-to-consumer relationships, greater consumer anonymity makes monitoring more difficult and consumer responsibility harder to ascertain. Although the seller may transfer some of the risk to the consumer through the contract by imposing fees to fix damages, irresponsible behavior makes it more difficult to recover the product for reuse or recycling [23,47,100,101]. We anticipate that, particularly in the business-to-consumer market, sellers may sometimes need to invest in monitoring or incentivizing customers to ensure products are returned. Investments in tracking and tracing technology, for example, enable monitoring, which in turn reduces information asymmetry by helping companies locate products [17].

For products that consumers purchase in large quantities, incentives for consumers to return these products may take the form of refunds when the products are returned [65,102]. According to agency theory, agency problems arising from customer misbehavior can be mitigated by rewarding and monitoring agents to ensure their compliance with contracts [41,42]. However, incorporating such incentives in customer agreements increases transaction costs as they will influence product pricing, require planning, and add details that must be considered in contractual design [32,33]. Moreover, the power of refund incentives may be insufficient to encourage customers to return products when returns require substantial customer effort (e.g., the customer must travel a large distance to return a product). Nevertheless, for some products, refunds have been successful in incentivizing customers' product returns. For instance, statistics show that, in Finland, 96% of aluminum cans are returned [103].

The Internet of Things (IoT) has recently enabled radical improvements in asset tracking. IoT makes it possible for sellers to gather real-time information on the location and condition of assets. It contributes to dramatically lowering monitoring costs and reducing information asymmetries in the relationship between the seller and the client, who obtains the rights to use the asset before returning it. Companies can potentially save tens of thousands of dollars and hundreds or thousands of hours in asset tracking and management by using IoT [104]. For instance, computers, washing machines, lighting systems, and fridges will soon have the inbuilt ability to communicate with their manufacturers, sending real-time information about their use patterns and the condition of their components [105]. This technology will also help sellers meet their contractual obligations to maintain, repair, and update these assets. Furthermore, improvements in asset tracking will make it easier to incentivize customers to keep assets in good condition and return them after use [105]. Incentive schemes have been established by companies, such as ReCellular and HYLA Mobile, which provide customers who return the products with a compensation or reward that depends on the quality of the used product [18,106,107]. H&M also plans to provide incentives to customers to increase the supply of used garments [108]. This financial compensation offsets the costs associated with restoring the quality of the asset. According to agency theory, monitoring and incentives will help ensure that circular business models work by increasing the likelihood that assets are recycled and reused.

9. Concluding Remarks

Studying and understanding the degree of uncertainty that exists for companies wishing to move from the linear economy to do business in the circular economy is important for the success of this transition. In this paper, we reviewed theory on value creation and the implementation of next-generation business models. We also discussed important aspects defining circular business models and the circular economy. Our goal was to develop a theoretical foundation to understand how firms can profit in the circular economy and why firms may not be able to successfully transform their existing business models to competitive business models based on the circular economy. We referred to current laws on the circular economy and relevant management challenges, provided examples, and developed a theoretical understanding based on several theoretical perspectives of why and how transitioning to the circular economy can to lead to differences in company behavior and profitability. Although prior research on the circular economy and sustainability has stressed the need to implement the circular economy or has emphasized its importance for policy, less is known about how companies

can tackle this challenge [109]. We argued that several research areas and theoretical perspectives are necessary to understand the complex tasks that companies and business practitioners face when transitioning to the circular economy. Moreover, we discussed the relevance of studying this issue for the management, organization, marketing, strategy, and innovation communities. To the best of our knowledge, this paper is the first to outline theoretically grounded research agendas for how to study business in the circular economy.

Although the purpose of this exercise is to encourage individual studies and research in the separate areas we have reviewed, we also believe that this paper can be useful for developing a broader understanding of what occurs in companies as they transition into the circular economy. We discussed why uncertainty in structural adaptation through realignment to fit the environment can influence and slow managers' and companies' ability to identify circular business models and define new value propositions that align with the circular economy. However, we also explored the conditions under which managers and companies can achieve such an alignment and initiate change. Top management and company creativity, together with the capacity for and commitment to change, are important for companies to initiate a new generation of business models. We also discussed the difficulties companies have with contract design and transactions as they begin reconsidering partnerships with circular and sustainable business models. One reason for these difficulties is that the uncertainties surrounding the circular economy hinder companies' ability to act with limited contracting costs because they are unable to contract partners or else lack the competence to formulate contracts that are detailed enough throughout the transformation. Thus, large companies and companies that have contracting competence, along with intelligent arrangements for joint responsibility, are better equipped to develop and implement circular business models.

In our discussion of how changes in requirements and trends through the circular economy can influence the ways companies reconfigure their resource portfolios, we reasoned that it is difficult for companies to change the flow of their resource investment portfolios to rely on collaboration partners' capabilities and resources. We identified several new resources that are needed and highlighted the risks of being unable to invest properly. When resource investments are made to support circular business models, managers face organizational inertia and internal challenges that they must overcome when building new types of necessary resources. As such, the resources and capabilities that are needed to compete in the circular economy should be the focus of future research. We also discussed the influence of networks and the industry structure, suggesting that potential downsides and costs can be expected when new strategic networks are developed around the circular economy and that existing trusting relationships may need to be replaced. In addition, we highlighted the circumstances under which the redesign of a manufacturer's products can differentiate that manufacturer. We also showed that partners in a reverse supply chain need to develop unique expertise to provide various services to inspect and repair used products. In other words, the change from a linear business model to a circular business model may sometimes also require substantial investments by third-party service providers. From an industry perspective, areas for further study are evident. For example, we expect that product component modularization and other important industry management trends improve manufacturers' bargaining position in relation to service providers by reducing switching costs. The extent to which bargaining, industry mechanisms to increase or mitigate rivalry, industry concentration, and other conditions influence the opportunity to profit from circular business models is an important area of study for research into the business practice implications of the circular economy. Finally, we discussed the importance of understanding and studying several aspects of agency theory in relation to implementing circular business models. Customers' responsibility increases when companies develop circular business models. Agents (i.e., customers) may misbehave by damaging or inappropriately handling products when companies offer functional or long-term contracts to ensure the highest possible sustainability standards. In Table 1, we briefly depict the theoretical perspectives that we drew on in this paper and suggest potential avenues for future research.

Table 1. Summary of the theoretical perspectives related to the circular economy and research questions for future research.

Theoretical Perspective	Key Problem	Example Questions
Contingencies and the importance of environmental fit to create market opportunities from circular economy.	Why and how measuring uncertainty in structural adaptation through realignment to fit with the environment can influence and slow managers' and companies' ability to identify circular business models and define new value propositions that align with the circular economy.	What are the mechanisms through which companies can manage their alignment to change caused by sustainable environmental demands? What are the characteristics and conditions of top management that influence companies' capacity to change and initiate new circular business models? What factors determine the pace at which companies can transform from a linear take-make-waste business model to a circular business model?
Transaction costs and contracting between partners involved in creating the circular economy.	Difficulties with contract design and transactions to start reconsidering partnerships with circular and sustainable business models.	What uncertainties surrounding the circular economy prevent companies from entering into contracts with partners? How can companies formulate contracts that are detailed enough when transferring to the circular economy? How will the redesign of products or materials influence the degree of uncertainty associated with specifying contractual contingencies in manufacturer–supplier relationships, and how will this influence the ability to craft complete contracts? What are the potential ex-post consequences of unanticipated actions in supply chains?
Differences in firms' resources and capabilities.	How to identify and measure changes in requirements and trends in the circular economy that ultimately influence the way companies reconfigure their resource portfolios.	How do companies change resource investment portfolio flows when transferring to a circular business model? When resource investments are made to support circular business models, to what extent do managers face organizational inertia and internal challenges that they need to overcome when building new types of necessary resources? What is the role of material design sustainability in a firm's competitive advantage? How will the locations of collection points influence a manufacturer's supply of reused material? What are the implications in terms of profitability? What value will advances in asset-tracking technology, including IoT, bring to supply chain management? How will these advances enhance the firm's competitive advantage? How will the quality of after-sales services influence the firm's competitive advantage?
Differences in network position and path-dependence logics.	How to unpack the influence of networks and industry structure. Examples include potential downsides and costs to be expected when new strategic networks are developed around the circular economy and the fact that existing trusting relationships may need to be replaced.	What is the impact of network aspects, such as trust and connectedness, on information sharing when companies implement circular business models? How are profitable ties and networks developed in the circular economy? How can a manufacturer encourage its existing suppliers to make relationship-specific investments that are required for a circular business model? What are the switching costs if partners need to be replaced? How will collaborative alliances be set up to enable system-level changes and radical innovation, and how will they be governed?

Table 1. *Cont.*

Theoretical Perspective	Key Problem	Example Questions
Industry and structural differences in terms of competition and barriers to entry.	The extent to which bargaining, industry mechanisms to increase or mitigate rivalry, industry concentration, and other conditions influence the opportunity to profit from circular business models.	How will radical innovations required for business models to work influence industry structures? What kind of changes in business behavior will emerge?How will rivalry between suppliers of virgin and used materials affect industry profitability? How will this rivalry influence pricing? How will the competitive and bargaining positions of actors within industries alter due to increasing resource scarcity? How do differences in industry structures influence the relationship between manufacturers and third-party service providers? What is the role of industry concentration and market power for firms' positions and performance?
Agency issues, contractual design, and customer relationships.	How agents (i.e., customers) may misbehave by damaging or inappropriately handling products when companies offer functional or long-term contracts to ensure the highest possible sustainability standards.	How can sellers ensure that customers comply with contractual terms so that products are returned in good condition? When do customers act in a responsible or irresponsible manner? How, when, and why do agency problems occur in the implementation of circular business models? How will the advent of IoT influence the monitoring procedures and costs involved in asset tracking? Will reduced information asymmetries mitigate the risks of irresponsible behavior? What kinds of incentive schemes will clients prefer, and which will be the most efficient in ensuring products are returned in good condition?

Given the apparently enormous economic advances of circular business models, why is the current system still dominantly linear? We realize that our discussion is limited and that management scholars and those interested in management problems have a large task ahead. We also realize that our effort is broad and neglects a lot of important details of what can be studied. For example, researching these theories alone and not discussing the theoretical contradictions between them would be a shortcoming. Theories, like the resource-based view, would suggest that the rationale for entering a business model based upon the circular economy is the value-creation potential of firm resources that are pooled together and that the extent to which firms manage such a pooling would explain their entry into the circular economy. However, transaction cost theory would hold that the failure of companies to enter the circular economy and compete with such business models would be the lack of success to minimize the sum of production and transaction costs with such models. Indeed, perhaps the reasons for this failure are high asset specificity, uncertainty, and maybe even risk of opportunism from regulatory bodies and larger players that set environmental policy. This a very different explanation compared to the one stemming from the resource-based view. As such, we believe there is much to learn from allowing different theory explanations to compete to explain where the real bottlenecks are for the circular economy and why companies are slow to enter into competition with sustainability.

Overall, our theory review suggests that companies that enter the circular economy with innovative business models to address sustainability concerns face a highly uncertain environment. In this environment, customers and customer behaviors are sometimes unknown or undefined, and the needs of product attributes are uncertain. Furthermore, there is no clear or established value chain or value-delivery mechanism based on what has been widely researched and propagated under the traditional make-use-dispose business model. In light of this uncertainty, we suggest that companies interested in circular or sustainable business models will be at or near the forefront and will have enormous potential to stake a claim on their markets, which could lead to profits and long-term competitiveness. However, the level of experimentation needed is probably significant, and research

into broader theoretical perspectives will play an important role in documenting and explaining how value creation and competitiveness develop in the circular economy.

We believe that our literature review and the problems we identified in the review outline several areas that will be useful to consider in future research. In fact, the discussions we identified provide a good basis of what could be considered key dialogues in the literature about circular business models and sustainability from a theoretical perspective. Scholars will likely benefit from positioning their research into these dialogues.

Author Contributions: T.L., J.W. and V.P. have contributed to all parts of the manuscript. This includes conceptualization, analysis, investigation, resources, writing-original draft preparation, review & editing and visualization.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

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