# Template for paper reviews (substituir este título pela referência completa do artigo)

Salvar este arquivo antes de inserir o conteúdo, substituindo o que está entre parênteses SEP5848-2- review (nome do aluno), (sobrenome do autor principal), (ano de publicação), (título resumido do artigo)

Seu nome e data: Ricardo Esposto – 13-09-2020

Várias dessas informações solicitadas não podem ser extraídas do artigo e devem ser obtidas via internet. Mesmo assim, pode ser que você não encontre algumas informações, ou elas não fazem sentido para o tipo de artigo que você está lendo (principalmente se forem capítulos de livros ou artigos “populares”). Nesses casos, digite NADA no tópico correspondente.

As informações podem ser inseridas em inglês, como cópia do original (citar a página)

1. Autores (um registro por autor) – na turma SEP5848 2020 não precisa detalhar, somente escreva possíveis informações sobre os autores que constem no artigo.
	1. Nome do autor (link research gate): Julia L.K. Nußholz (https://www.researchgate.net/profile/Julia\_Nussholz)
	2. Instituição (link web site):Aalborg University (https://www.en.aau.dk/)
	3. Tipo: aluno (post doc)
	4. Idade: NADA
	5. Temas comuns de pesquisa: Business Models, Innovation, Business Model Innovation, Product Life-Cycle Management, Resource Efficiency, Sustainable Building, Value Creation.
	6. Anos pesquisando no tema do artigo: Pelas publicações a apresentação de informações de carreira no research gate, a pesquisadora atua no tema desde 2015.
	7. Índice-h: 14,17
	8. Colegas da mesma instituição: [Bjarne Gantzel Pedersen](https://www.researchgate.net/profile/Bjarne_Gantzel_Pedersen), [Mostafa Ahmed](https://www.researchgate.net/profile/Mostafa_Ahmed14), [Nicholai Bille](https://www.researchgate.net/profile/Nicholai_Bille), [Andreia Fidalgo](https://www.researchgate.net/profile/Andreia_Fidalgo2), [Ján Jankovič](https://www.researchgate.net/profile/Jan_Jankovic), [Astrid Jensen](https://www.researchgate.net/profile/Astrid_Jensen4), [Jana Jöns](https://www.researchgate.net/profile/Jana_Joens2), Anja Marie Bundgaard, [Leonie Schlüter](https://vbn.aau.dk/en/persons/143687), [Sayed Mohammad Ayati](https://vbn.aau.dk/en/persons/146213), [Federica Conti](https://vbn.aau.dk/en/persons/137120).
	9. Quantidade de artigos já publicados: 31 (Google Scholar); 13 (Research Gate).
	10. Outros artigos significativos (mais citados) sobre outros temas:
	11. Outros artigos significativos (mais citados) neste tema:
	12. Co-autores recorrentes: para criarmos uma rede de relacionamento e descobrir os cluster de co-autores que colaboram

[Leonidas Milios](https://www.researchgate.net/profile/Leonidas_Milios), [Katherine Whalen](https://www.researchgate.net/profile/Katherine_Whalen), [Freja Nygaard Rasmussen](https://www.researchgate.net/profile/Freja_Nygaard_Rasmussen), [Lars Strupeit](https://www.researchgate.net/profile/Lars_Strupeit), [Nancy Bocken](https://www.researchgate.net/profile/Nancy_Bocken), [Oksana Mont](https://www.researchgate.net/profile/Oksana_Mont), [Andrius Plepys](https://www.researchgate.net/profile/Andrius_Plepys).

1. Reescrever o abstract subdividindo nos seguintes tópicos:

Contextualização: To aid companies in transitioning towards a circular economy and adopting strategies such as reuse, repair, and remanufacturing, the concept of circular business models has been developed. Although the concept draws on contributions from various academic disciplines, and despite its increasingly frequent use, few scholars clearly define what a circular business model is. Understanding about what makes a business model circular is diverse, hampering the theoretical development and practical application of circular business models.

gap/lacuna/ problemas que o artigo quer resolver: This study aims to help frame the field of circular business model research, by clarifying the fundamentals of the concept from the perspectives of resource efficiency and business model innovation.

objetivo: Expanding on these findings, a review of how the concept is used in recent academic literature is provided.

metodologia utilizada:NADA

resultados: It shows that a coherent view is lacking on which resource efficiency strategies classify a business model as circular.

contribuições (para academia e para a prática): the study contributes to theoretical advancement and effective implementation of circular business models.

conclusão: With the definition grounded in analysis of the fundamentals in terms of resource efficiency and business models, the study contributes to theoretical advancement and effective implementation of circular business models.

1. Palavras-chaves que o autor indicou e se elas foram citadas no abstract.

**circular economy**; **circular business models**; **business model innovation**; **resource efficiency**; product life extension; product life cycle. As que estão em negrito foram citadas no abstract.

1. Introdução e/ou revisão bibliográfica introdutória, afirmações / constatações (tipo) versus citações (essa lista pode ser longa, por isso coloquei em forma de tabela). Copiar trechos significativos somente. Serve para perceber o que existia no estado da arte antes do artigo ser escrito, para conhecer qual gap/lacuna/ problemas que o artigo quer resolver, e a justificativa. Compare com o que está no resumo e observe o que o autor destacou no resumo.

|  |  |  |
| --- | --- | --- |
| **Afirmação / Constatação (copie do artigo)** | **Tipo (\*1)** | **Referência (\*2)** |
| To improve resource productivity and efficiency of our society, the concept of a circular economyhas recently been revived | contexto | European Commission: Brussels, Belgium, 2015.Ellen MacArthur Foundation: Cowes, UK, 2013. |
| The circular economy is a paradigm that suggests a redesign of the current linear economic system, largely based on linear resource flows, towards closed-loop resource flows that can preserve the embedded environmental and economic value in products over time | contexto | Stahel,W, 1994; Lifset, R.; Graedel, T.E., 2002; Frosch, A.R.; Gallopoulos, N.E., 1989. |
| Circular business models generally reconcile creation of commercial value with adoption of resource efficiency strategies, such as repair and remanufacturing, by capitalising on the economic and environmental value embedded in products | contexto | Bocken, N.; De Pauw, I.; Bakker, C.; Van der Grinten, B., 2016; Bakker, C.; Den Hollander, M.; Van Hinte, E.; Zljlstra, Y., 2014. |
| However, despite the increasing use, few scholars provide a clear definition of circular business models, and no common understanding of the concept has been established. To date, many fundamental questions in the emerging field remain unanswered. | Lacunas / problemas | Própria autora |
| These inconsistencies may partly stem from the fact that, although the term is relatively new,it builds upon two well-established notions: (1) business models from the management field; and (2)circular strategies from the resource efficiency field. | Lacunas / problemas | Própria autora |
| For instance, which elements, features, or contributions to changing resource flows make a business model circular, and how can it be distinguished from a linear business model? | Lacunas / problemas | Planing, P., 2015. |
| However, the integration of these perspectives has yet to be fully developed to aid effective implementation of circular business models and to secure their potential resource efficiency gains. | justificativa | Própria autora |
| help frame the field of circular business models by clarifying the fundamentals of the concept from the perspectives of resource efficiency and business model innovation and exploring how these two perspectives are linked. The study also aims to systematise current knowledge regarding the circular business model concept, including the main considerations behind securing the potential resource efficiency gains when implementing circular strategies.  | justificativa | Própria autora |
| Through this three-fold analysis, a definition of the circular business model concept is proposed. | justificativa | Própria autora |

(\*1) Tipos de afirmação / constatação: contexto, lacunas, problemas, justificativa para realização do artigo / pesquisa (às vezes confunde-se com lacunas / problemas)

(\*2) Inserir somente autor(es) e ano. A referência completa encontra-se no próprio artigo

1. Casos citados e principais características dos casos (quando existirem)

Não foram citados casos específicos de aplicação dos conceitos, mas foram estudadas linhas de desenvolvimento e apresentação do tema, consolidados na figura a seguir:



“strategies for cycling products, parts, or materials (from here onwards referred to as circular strategies) have been developed to improve resource efficiency in the use and end-of-life phases. This set of circular strategies includes enabling a second life for products and parts through repair or remanufacturing and enabling material recycling when the end-of-life is irreversibly reached. By reintegrating the recovered secondary products, parts, and materials in the value chain, this set of circular strategies also addresses impacts occurring at the beginning of any product life cycle, as they can substitute resource-intensive primary production”

1. Questão da pesquisa, Foco (escopo) e Objetivos (geral primário e secundários)

This study aims to help frame the field of circular business models by clarifying the fundamentals

of the concept from the perspectives of resource efficiency and business model innovation, and exploring how these two perspectives are linked.

The study also aims to systematise current knowledge regarding the circular business model concept, including the main considerations behind securing the potential resource efficiency gains when implementing circular strategies. Through this three-fold analysis, a definition of the circular business model concept is proposed.

1. Hipóteses que ele deseja provar com este artigo (muitas vezes as hipóteses resultam de conjecturas que o autor realiza a partir do que é apresentado na introdução)

“systematise current knowledge regarding the circular business model concept, including the main considerations behind securing the potential resource efficiency gains when implementing circular strategies” e “…a definition of the circular business model concept is proposed.”

1. Qual o diferencial deste artigo com relação a outros? (segundo o autor, caso ele tenha citado). Avaliar uma por uma, caso o autor tenha feito isso. Pode montar uma tabela se for o caso. Veja que ainda estamos na introdução do artigo, que é o ponto crucial para que atraia o leitor (e o revisor quando ele já gostou do resumo e leu a introdução).

A autora não cita diretamente nenhum diferencial específico para outros artigos. Entretanto, pode-se fazer uma inferência de diferenciações existentes na linha de definições na qual ela questiona.

These inconsistencies may partly stem from the fact that, although the term is relatively new, it builds upon two well-established notions: (1) business models from the management field; and (2) circular strategies from the resource efficiency field. While business models are used to analyse the value creation architectures of businesses, circular strategies stem from a research field that studies resource efficiency through circular resource flows to preserve the embedded environmental and economic value. However, the integration of these perspectives has yet to be fully developed to aid effective implementation of circular business models and to secure their potential resource efficiency gains.

1. Metodologia (na turma SEP5848 2020 não precisa detalhar, só escreva o título da metodologia, caso o autor tenha mencionado)
	1. Descrição Geral: Nome do(s) método(s); se é qualitativo, quantitativo ou combinação de ambos

NADA. A autora não cita explicitamente qual metodologia executada, apesar de ter feito uma metodologia qualitativa de buscas e termos específicos.

* 1. No caso de artigos de revisão bibliográfica
		1. Período de análise das referências (publicações desde que ano):

Não houve período específico selecionado, deixando a data de busca executada em Outubro de 2016 para trás. (No timeframe was applied (as of October 2016).

* + 1. Tamanho da amostra analisada:

**302 artigos que, após filtros, resultaram em 44 artigos.**

The search using the selected key words resulted in 302 articles and conference proceedings. After checking the titles to ensure the relevance to the research inquiry, the abstracts were checked and, if considered appropriate, the full paper was analysed. The resulting set of studies was expanded through cross-reference techniques in several individual articles to provide sufficient background information on specific research results, concepts or terms referred to in the included literature. After filtering, 44 documents were considered relevant to analysing the current use and understanding of the concept.

* + 1. Quantidade de referências citadas

73 referências citadas

* + 1. Foram realizadas observações complementares?

Sim, foram realizadas observações que ressaltassem maior conexão com o tema proposto de estudo, fazendo uma técnica de referência cruzada.

* + 1. Fontes da revisão (casos, periódicos específicos, e quais bases de dados). Quais as justificativas para escolher essas fontes.

Escolheu-se a base de dados Scopus pois, segundo a autora, é a base que possui maior variedade de periódicos no assunto.

The search was conducted via the Scopus database, as it is the largest database for academic work and provides access to a wide variety of journals (e.g., Journal of Industrial Ecology, Journal of Cleaner Production, Business Strategy and the Environment, Journal of Remanufacturing, Sustainability, Resources, and International Journal of Waste and Resources) and conference proceedings in the field (e.g., Ecodesign Symposium and Industrial Product-Service-Systems).

* + 1. Estratégia para construção da string de busca

The scope of the search was limited to academic studies that explicitly referred to the concept of circular business model. For example, studies that aim to conceptualise the term “circular business model” or to examine companies’ transition towards a circular business model were considered relevant. Studies that address business models for sustainable development, product service systems (PSSs) or industrial symbiosis without an explicit reference to advancing circular economy were **excluded** from the analysis. Search terms used were “circular business model”, “business models for circular economy”, “business models for remanufacturing”, and “closed-loop business models”. Other search terms, such as “closed-loop manufacturing” or “circular business case” were **omitted** to keep the scope manageable.

* + 1. String de busca

“circular business model”, “business models for circular economy”, “business models for remanufacturing”, and “closed-loop business models”

* + 1. Filtros

After checking the titles to ensure the relevance to the research inquiry, the abstracts were checked and, **if considered appropriate**, the full paper was analysed. The resulting set of studies

was expanded through **cross-reference techniques** in several individual articles **to provide sufficient background information on specific research results**, concepts or terms referred to in the included literature. After filtering, **44 documents** were considered relevant to analysing the current use and understanding of the concept.

* + 1. Técnica / método de análise utilizada

Nenhuma técnica foi elucidada pela autora, inferindo-se, entretanto, que utilizou-se de seus conhecimentos no assunto e também de técnica de referência cruzada entre autores e citações para sustentação de sua decisão.

* + 1. Metodologia para definição de pesquisas futuras (se fizer parte da análise da literatura): NADA
	1. Passos para realização da pesquisa e referências (fontes) utilizadas para definir a metodologia de pesquisa

The scope of the search was limited to academic studies that explicitly referred to the concept of circular business model. For example, studies that aim to conceptualise the term “circular business model” or to examine companies’ transition towards a circular business model were considered relevant. Studies that address business models for sustainable development, product service systems (PSSs) or industrial symbiosis without an explicit reference to advancing circular economy were **excluded** from the analysis. Search terms used were “circular business model”, “business models for circular economy”, “business models for remanufacturing”, and “closed-loop business models”. Other search terms, such as “closed-loop manufacturing” or “circular business case” were **omitted** to keep the scope manageable.

1. Resultados
	1. No caso de artigos de revisão bibliográfica (na turma SEP5848 2020 não precisa detalhar)
		1. Quantidades de publicações resultantes antes e após cada filtro

302 artigos para 44 artigos.

* + 1. Utilizou publicações sem avaliação por pares? Quantas?

Em momento algum a autora ressaltou que os artigos analisados foram avaliados por pares. Assim, entende-se que todos os artigos não foram avaliados por pares.

* + 1. Definições (resultantes da análise ou mesmo adotadas como premissas no início da publicação)

A autora utiliza definições específicas para cercar os termos de pesquisa na introdução e no desenvolvimento do artigo, apresentados a seguir:

**Circular business models** generally reconcile creation of commercial value with adoption of resource efficiency strategies, such as repair and remanufacturing, by capitalising on the economic and environmental value embedded in products;

**Resource Efficiency and Circular Strategies:** strategies for cycling products, parts, or materials (from here onwards referred to as circular strategies) have been developed to improve resource efficiency in the use and end-of-life phases. This set of circular strategies includes enabling a second life for products and parts through repair or remanufacturing and enabling material recycling when the end-of-life is irreversibly reached. By reintegrating the recovered secondary products, parts, and materials (from here onwards referred to as secondary production) in the value chain, this set of circular strategies also addresses impacts occurring at the beginning of any product life cycle, as they can substitute resource-intensive primary production.

Some of the existing resource efficiency strategies can be realised at company level within its own processes and product development, e.g., reduced material leakages and reduced material use in products. However, realising circular strategies often extends beyond company boundaries;

While many of the resource efficiency strategies require only marginal changes in companies’ processes and value chains, implementing circular strategies often requires more holistic and radical changes beyond the boundary of a company.

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Business Model Concept: Business models can be understood as a structured management tool used to present the company’s organisational structure and value creation processes or being described as a business model as the organisational and financial architecture, defining how an organisation converts resources and capabilities into economic value.

A definition widely cited is the one of Osterwalder and Pigneur, stating that a business model is the core logic how a company creates, delivers, and captures value.

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**Innovating business models** comprises a reconfiguration in the business model elements including innovating: (1) the content (adding new activities); (2) the structure (linkages and sequencing of activities); (3) the governance (the control/responsibility over an activity) of the activity system between the company and its network;

**Business model innovation** can alter how an organisation is connected to external stakeholders, and how it engages in economic exchanges with them to create value for all partners.

**Business Model Innovation as Enabler of Circular Strategies**: By rethinking the three value dimensions, i.e., what value is proposed, how value is created and delivered and how value is captured, business model innovation provides a more systemic approach for aligning the calue creation logic for the company with circular principles.



The **value proposition** in a circular business model can be created to build a product/service offer that contains and deliberately uses a circular strategy to create value; Innovating the value proposition can help bring the offer to the market, and help identify the right customer segments, for whom the associated value is attractive; Customer relationships can be developed, not only to create additional value for customers, but also to help remove barriers to the collection of products.

The **value capture** elements can be devised to capitalise on additional revenue sources, cost reductions or non-monetary benefits associated with circular efficiency strategies and value preservation. Additional revenue streams can stem from capitalising on markets for secondary production capturing value from redistributing, repairing and reselling of post-consumer products.



* + 1. Evolução da pesquisa / das publicações no assunto



Although figure reveals that authors’ understanding of what a circular business model is remains heterogeneous, there appears to be agreement that circular business models lend themselves to:

* substituting primary material input with secondary production;
* extending the useful lifetime of products through design for longer average lifespans and enabling second life (e.g., repair or remanufacturing); and
* material recycling.

There is still a lack of consensus as to whether production-related resource efficiency strategies

(e.g., reducing material leakages and emission reduction) are included in circular business models.

* + 1. Comunidades / “tribos” / “igrejas”/ áreas de conhecimento / disciplinas identificadas
		2. Características de cada tribo (os atributos e/ou explicações são definidos pelo próprio artigo)
	1. Principais resultados “achados” (*findings*)- serve para todos os tipos de artigos
* **How Are Circular Business Models Understood?:**

Reviewing academic literature on circular business models shows that authors rarely provide a clear definition;

The existing definitions do not clarify if it is sufficient to operate one of the included resource efficiency strategies, even if this does not guarantee that material loops are closed when the end-of-life is irreversibly reached. It also remains unclear whether a resource efficiency strategy that does not entail cycling of products, parts, or materials (e.g., developing recyclable material), but that may help to close a loop at value chain level, is also part of circular business models.



* **Which Types of Circular Business Models Are Discussed?**

Three attempts to categorise generic types of circular business models have been made in academic literature and designed for different purposes: Bakker and co-workers’ typology is useful to guide business model innovation at a product level; Bocken and co-workers’ typology presents business model innovation for specific changes in resource flows and Moreno and co-workers’ typology supports studying interventions from a value chain perspective. Each of the typologies distinguishes 5–6 types of circular business models that, in distinct ways, create, deliver, and capture value from embedding circular strategies in their offer. Circular business model types can be understood as generic configurations of business model elements that have potential to aid application of a circular strategy, while also capitalising on the associated value flows, e.g., by adding environmental, customer and economic value



* **How Are Circular Business Models Different to Linear Ones?**

Clarifying potential differences between the concepts of linear and circular business models is important to determine whether studying circular business models requires novel tools and frameworks or if the ones used to examine linear business models remain valid.

Scholars commonly associate circular business models with characteristics such as ‘increased

collaboration’, ‘pay for performance’ instead of ownership, and operating ‘reverse logistics’. Although such specific configurations of the business model elements are assumed to become more common, given the variety in offers, product types, and resource efficiency strategies of business models that are claimed to be “circular”, these characteristics are unlikely to be applicable across many companies. Böckin et al. offer a list of 13 generic product characteristics,

such as a consumable product, low frequency use, and fashion driven. These product characteristics are assumed to influence which resource efficiency strategy has the highest reduction potential, but also influence the changes in business models that can support realising the resource efficiency strategy and change in material flow. Adjusting the business model is understood only as “a means to an end” [63] and, depending on product characteristics, different business model innovations are suitable.

Therefore, instead of a certain configuration of business model elements, e.g., a PSS and shared-

model, the key difference of circular business model elements, compared to linear ones, appears to be the embeddedness of a circular strategy in the offer, which can alter material flows.

* While understanding of circular business models varies, several generic principles stemming from resource efficiency science determine whether implementing the embodied circular strategies will result in resource efficiency gains.
	1. Discussão dos resultados: Tópico muito importante, pois normalmente o autor compara com resultados de outros trabalhos. É o tópico do artigo do qual tiramos mais informações que caracterizam este artigo.

**Considerations for Implementing Circular Strategies:** scholars regard circular business models as business models that operate resource efficiency strategies, such as the substitution of primary material input with secondary production, extended useful life of products, and material recycling. These circular strategies are sometimes regarded as being synonymous with resource efficiency gains. However, implementing circular strategies does not by default lead to increased resource efficiency. Therefore, the goal of resource efficiency has to be specifically set when implementing circular strategies.

**First Strategy - Replacement versus Reuse**: The main idea behind reuse is that it can substitute high impact primary production with lower impact secondary production. Although this is generally true, reuse of products does not guarantee resource efficiency gains. The resource efficiency gains of reusing a product or part, for instance, depend on the processes needed to return a product to a suitable state or location, as well as on the use-phase impacts in a second life.

**Second Strategy - Limits to Material Recycling**: The benefits of recycling are widely accepted, as the energy needed for recycling is generally substantially lower than the energy needed to produce the material from the ore. However, there are inherent limits to the resource efficiency gains that can be achieved with recycling. Inefficiencies at each stage of the recycling process will always keep recycling efficiencies lower than 100%. Moreover, liberating materials in complex product designs poses barriers to efficiency and causes material losses. Depending on the material and circumstances such as location, electricity-generation mixes, collection system, and recycling processes, the resource efficiency gains from reducing primary material input may be outweighed by the resource efficiency gains associated with recycling processes (e.g., from reverse logistics or powering recycling equipment). For some bio-based materials, waste-to-energy conversion is, under certain conditions, the preferred strategy.

**Third Strategy - Rebound Effects:** If the resulting secondary production does not reduce primary production, implementing circular strategies risks increasing overall production, partially or fully offsetting their resource efficiency gains. Two mechanisms that can lead to such rebound effects: first, when secondary products are not compatible alternatives to primary products, and second, if they reduce prices and therefore lead to increased consumption. Suggested measures to avoid these rebound effects are to ensure that secondary products are good substitutes for primary ones, and that they target markets where consumers’ price sensitivity is low. The resulting market impacts of the end-of-life treatment are of critical importance, so displacing primary production should be at the core of circular strategies, rather than a narrow focus on closing resource loops.

**A Definition for Circular Business Models:** The analysis showed that authors regard resource efficiency strategies that enable substituting primary material input with secondary production, extending the useful life of products and parts, and closing material loops as the key strategies operationalised by circular business models;

***A circular business model is how a company creates, captures, and delivers value with the value creation logic designed to improve resource efficiency through contributing to extending useful life of products and parts (e.g., through long-life design, repair and remanufacturing) and closing material loops.***

* 1. Outros tópicos que não foram tratados aqui (caso existam): NADA
	2. Proposições de pesquisas futuras: Em muitos artigos estão localizadas após as conclusões.

Two thematic avenues can be outlined for future research. Firstly, the question arises whether

the proposed definition of the concept is helpful in guiding circular business model development

and whether the concept as envisioned by theory can be implemented. Secondly, in some cases of closing material loops, value chains of companies will not end with the product leaving the company. Instead, a company will manage several connected networks of value generation beyond a single life of product. In these cases, business model planning will need to span several steps in the product life cycle, ultimately rendering business model configurations more complex. Linear business model frameworks and tools may be of limited value in such cases. Future research should clarify where existing tools are sufficient, and where new frameworks and tools are required, which lend themselves better to effectively embed circular strategies in business model development.

* 1. Contribuições para academia e prática: Muitas vezes o autor destaca as contribuições depois de apresentar todos os resultados ou mesmo depois das conclusões. Porém, alguns escrevem no início para “vender melhor” o artigo.

This study has helped to frame the emerging research field, but several open questions around

the circular business model concept remains. **What improvements in environmental impact should be realised for a company to have a viable claim that it runs a circular business model? It is important to note that implementing circular strategies, even if improvements in resource efficiency are achieved, do not by default reduce environmental impact**; for instance, if environmental improvements at product level are outweighed by rebound effects at system level.

Moreover, **how much should a company contribute to cycling resources and closing resource flows to have a viable claim that it runs a circular business model?** For instance, a company may have a business model that offers services for reverse logistics but does not operate a circular strategy itself.

This study has made a first attempt to **integrate the resource efficiency and business model perspectives in a definition**, which hopefully will help advance the circular business model concept beyond rhetoric and harness its potential.

1. Conclusões (as vezes o autor chama de comentários finais, pois não consegue concluir)
	1. Conclusões (quando existirem)

As conclusões foram consolidadas pela autora como Final Remarks. Entretanto, assumiu-se que os entregáveis da pesquisa foram dados pela definição atribuída para uma definição “mais clara” para economia circular e também para um mapeamento direcionado dos materiais publicados até então.

A circular business model is how a company creates, captures, and delivers value with the value creation logic designed to improve resource efficiency through contributing to extending useful life of products and parts (e.g., through long-life design, repair and remanufacturing) and closing material loops.

* 1. Trabalhos futuros (que o autor se propõe, diferente das proposições futuras)

A autora não se propõe para construção de trabalhos futuros suplementares ao publicado. Entretanto, sugere linhas de desenvolvimentos futuros, conforme apresentado a seguir:

**Two thematic avenues can be outlined for future research**. Firstly, the question arises whether the **proposed definition of the concept** is helpful in **guiding circular business model development** and whether the concept as envisioned by theory can be implemented. Secondly, **in some cases of closing material loops, value chains of companies will not end with the product leaving the company**. Instead, a company will manage several connected networks of value generation beyond a single life of product. In these cases, business model planning will need to span several steps in the product life cycle, ultimately rendering business model configurations more complex. Linear business model frameworks and tools may be of limited value in such cases. Future research should clarify where existing tools are sufficient, and where new frameworks and tools are required, which lend themselves better to effectively embed circular strategies in business model development.

* 1. Limitações

This study has made a **first attempt** to integrate the resource efficiency and business model perspectives in a definition, which hopefully will help advance the circular business model concept beyond rhetoric and harness its potential.

1. SUA ANÁLISE – assuma agora a perspectiva de um “revisor” do artigo.
	1. Pontos fortes

O artigo conseguiu trazer a tona as lacunas existentes sobre as definições e análises relacionadas as definições de modelos de negócios aplicados a economia circular, bem como apresentar as premissas básicas para que estas linhas sejam desenvolvidas atendendo as necessidades da academia e dos negócios.

Trouxe também as consolidações existentes nestas práticas, aproximando as necessidades para o desenvolvimento mais eficiente das práticas e variáveis relacionadas ao assunto.

* 1. Pontos fracos

Como em todo artigo científico de revisão, há sempre a limitação do escopo de busca das informações e limitação de buscas de base de dados e estratégia de string. Entretanto, pela proposta do artigo, apesar de ser um ponto fraco, não restringiu a excelente construção do trabalho.

* 1. Sugestões para melhoria do artigo

Este artigo poderia considerar as avaliações de PSS também, pois acredito que muita avaliação abordada se conectaria facilmente com estas publicações. Avaliaria também um pouco mais a fundo os conceitos de reutilização de materiais e as definições dos ciclos de aplicação dos desenvolvimentos, pois assim talvez fizesse mais sentido para a construção da definição do *closed loop* e do *framework* de modelo de negócios circulares.

1. Figuras ou tabelas importantes (caso você queira copiar e citar nos tópicos anteriores)







