



# Remanufactured products: A systematic review from the consumer perspective

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## Abstract

Remanufactured products (RPs) have received more attention from consumers, academics, and practitioners in recent years. The current study presents a comprehensive systematic review of the literature on consumer behavior toward RPs while adopting the theory, context, characteristics, and methodology (TCCM) framework. We followed the Scientific Procedures and Rationales for Systematic Literature Reviews (SPAR-4-SLR) protocol. In total, retrieved from Web of Science, Scopus, and ScienceDirect, we reached and analyzed 53 articles that directly address the purchase behavior of RPs. Studies mostly considered electronic RPs and used the theory of planned behavior to explain consumers' intention to purchase RPs. Moreover, the reviewed studies are primarily quantitative. Our review categorized the characteristics of the articles, such as consumer-related constructs, marketing mix-related constructs, and external environment-related constructs. Finally, we offer directions for future research based on the components of the TCCM framework to contribute to the development of the field.

**Keywords** Remanufacturing · Purchase intention · Remanufactured Products · Systematic Literature Review · TCCM framework

## Introduction

United Nations Industrial Development Organization [80] states that the circular economy (CE) encourages companies to produce sustainable products (e.g., new products with used parts). CE is a new philosophy based on several principles, such as designing out waste, building resilience through diversity, and relying on renewable energy [52]. Take-back legislations in many developed countries, such as the European Union's Waste Legislation on packaging and packaging waste [23], compels manufacturers to collect returned or

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end-of-life products and reuse them with various strategies to close material loops (e.g., remanufacturing, recycling, and refurbishing).

Among CE approaches, remanufacturing is a product recovery process [82] which includes replacing components or reprocessing used parts of a product [8]. Remanufacturing aims to decrease the number of returned products by repairing or updating used products with new parts to improve their quality to the standards of a new product. Remanufacturing helps companies reduce costs (e.g., disposal and production costs), provide cheap resources, and decrease the amount of waste. It also has considerable advantages, such as reaching new customer groups (e.g., environmentally concerned consumers) and creating a positive company image toward its target market. Furthermore, companies may benefit from insights into CE adoption in emerging economies [57]. Although remanufacturing provides considerable strategic advantages for companies, several factors may negatively affect these advantages.

For instance, consumers' willingness to purchase remanufactured products (RPs) is lower compared to new products [4], and RPs may reduce the sales of new products and create cannibalism because it is a low-price alternative [8]. A remanufactured product may be considered a low-quality version of the original product by customers, or customers may be suspicious about the performance of the RPs [1, 43]. These factors may create ambiguity for managers to remanufacture used products and may negatively affect consumer behavior toward RPs. Although consumer behavior toward RPs is a relatively new research area, it is getting more attention from academics and practitioners.

The current study *contributes* to the existing literature in the following ways. To the best of the authors' knowledge, this study is the first comprehensive review of consumer behavior toward RPs. The literature lacks a detailed and comprehensive systematic review of related studies on consumer behavior toward RPs. Paul et al. [60] note that another systematic review should be written when existing systematic reviews have huge gaps or shortcomings. Although several literature reviews attempt to investigate the topic, these reviews have some drawbacks. For example, Camacho-Otero et al. [12] mainly focus on the current scientific work on the circular economy and circular solutions addressing consumption. Their effort is to reveal the factors behind the circular solutions. Therefore, the study does not present a detailed review of consumer behavior toward RPs. Another attempt by Schallehn et al. [68] reviews the customer experience related to used products. Their main aim is to examine product-service systems related to used products via a category system consisting of seven different factors and capture the various facets of customer experience creation toward second-hand, remanufactured, and rented products. However, they ignore many studies about consumer behavior toward RPs. Apart from the earlier attempts, an editorial note about the papers published in a special issue where Govindan et al. [28] present a review of marketing issues for RPs through exploring various marketing strategies, consumer behaviors, pricing, and pricing and branding decisions, and optimized green transportation. Consumer behavior toward RPs is barely mentioned in a subsection of this study. Singhal et al. [72] investigate factors influencing consumers' behavior toward RPs with meta-analysis. The meta-analysis, applied to only ten articles, reveals relationships among several aspects of purchasing intention. However, the scope of the study is considerably limited and the authors didn't suggest any theories or constructs that can be implemented into new studies. Lastly, Bigliardi et al. [10] examine customers' purchase intention toward recycled products. Although the authors inform that the terms of recycling, remanufacturing, and refurbishing have been used interchangeably, these recovery options differ for customer evaluation. Furthermore, the study focuses on a limited number of constructs and theories. However, several factors and methodologies considered on the consumer behavior toward RPs have been ignored by this work. Table 1 reveals that there is a need for a comprehensive systematic review.

**Table 1** Summary of review papers about the consumer behavior toward RPs

Author(s)/Year	Scope	Search period	Systematic review type	N. of reviewed papers	Review categories
Camacho-Otero et al. [12]	Focus on consumption in the circular economy	Until Feb. 2018	3 stages: planning, conducting, reporting & disseminating the review	111 papers (includes only 27 papers related to remanufactured products)	Problem addressed, theoretical frameworks, methods and tools, issues, research gaps
Singhal et al. [72]	Remanufactured products and consumer behavior	2011–2018	Meta-analysis	10 papers	perceived green benefit, attitude, subjective norm, perceived behavioral control, perceived risk, and purchase intention
Govindan et al. [28]	Marketing issues for remanufactured products	1988–2018	Not specified	Brief literature review Top cited 20 papers (editorial note)	Article type, the problem addressed, methodology used, Scopus citation
Schallehn et al. [68]	Customer experience creation for after-use products (renting, remanufacturing, and second-hand models)	1996–2019	Content analysis-based literature review Contingency analysis	69 papers (only 20 papers related to remanufactured products)	Financial value, confidence, hedonic value, altruistic value, convenience, value context, social value
Bigliardi et al. [10]	Focus on the intention to purchase recycled non-food products	Not specified	Not specified	47 papers (includes only 31 papers related to remanufactured products)	Individual-related, product-related, and context-related
This review	Consumer behavior toward remanufactured products	Until 2022	TCCM framework	53 papers	Theory, Context, Characteristics, Methodology

*Secondly*, although the remanufacturing process and remanufactured products are not new phenomena, consumer behavior toward remanufactured products is an important issue that should be examined to reveal the potential of remanufactured products for gaining market share in a CE-based business environment. Therefore, we present a comprehensive review of consumer behavior toward remanufactured products considering both descriptive and detailed analysis. This systematic review seeks to answer the following *questions*, (1) What do we know about the literature on remanufactured products from a consumer perspective? (2) Where should the research on consumer behavior toward RPs be heading? (3) Which theories, context, characteristics, and methodology are used to explain the purchase behavior of RPs?

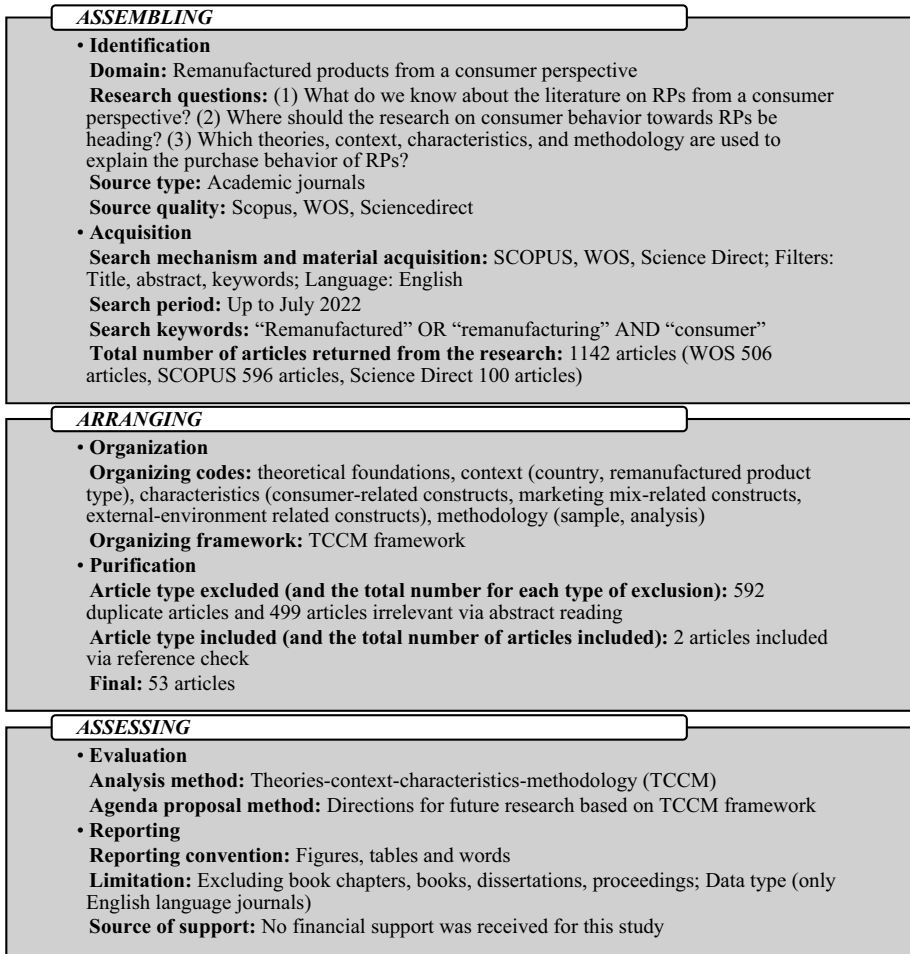
*Thirdly*, this study is the first attempt to employ the theory, context, characteristics, and methodology (TCCM) framework in the related literature [61]. The proposed framework is a valuable tool to identify theories used in the related literature (theory); the origin country of the research and the various types of remanufactured products (context); construct types and the relationship among them (characteristic); and quantitative/qualitative based methods (methodology). Furthermore, we suggest several agendas for future research that attempt to enrich the related literature by considering new theories and methodologies.

This study *aims* to reveal the factors behind consumer behavior toward RPs by reviewing articles in the related literature. The study is *structured* as follows. *Section 2* explains the methodology of the systematic review. *Section 3* gives the evolution of the research and examines the theoretical foundations, context, characteristics concerning constructs and relationships in the papers, and the methodology of the articles. *Section 4* gives a general discussion, and *Section 5* suggests future research directions. The last section gives the conclusion.

## Methodology

This study follows a standard procedure employed in systematic literature reviews (SLRs). SLRs aim to identify, determine, and arrange themes of a specific topic considering research questions while providing a theoretical and substantial contribution to the related literature [67]. SLRs are highly beneficial for examining the research gaps and offering future research directions [58]. Furthermore, many authors adopt SLRs in the marketing literature [7, 17, 33, 48]. We designed our systematic review process according to the *Scientific Procedures and Rationales for Systematic Literature Reviews (SPAR-4-SLR)* protocol [60], as presented in Fig. 1. SPAR-4-SLR provides state-of-the-art insights and agendas to advance knowledge in the related literature. The considered protocol should be arranged based on logical and pragmatic rationales, and stages and substages should be transparently reported. We summarized all data in an Excel file.

Different types of systematic reviews aim for theory development, such as domain-based, structured, framework-based, hybrid, theory-based, meta-analytical reviews, or reviews [58]. We benefited from *the theory, context, characteristics, and method (TCCM) framework* developed by Paul & Rosado-Serrano [61] while conducting the systematic literature review in our research. Many authors adapted the TCCM framework in previous review studies on various marketing-related topics [e.g., 7, 11, 33, 48, 59, 61, 62, 71]. After explaining the evolution of the research, we followed the TCCM framework [61] for our systematic review. *First*, we examined the theoretical foundations (T) of the papers. *Second*, we revealed the context (C) of the papers. *Third*, we explained the characteristics (C) of the papers to demonstrate the studied constructs and the relationships between these



**Fig. 1** Summary of the systematic review process (The SPAR-4-SLR protocol)

constructs. *Fourth*, we examined the methodology (M) of the papers regarding research designs, sample sizes, and analyses. Furthermore, we developed future research suggestions based on the TCCM framework.

## Findings

Table 2 represents bibliographic sources regarding consumer behavior toward RPs, and thus presents the evolution of the research. Paul et al. [60] indicate that a substantial body of work in that domain exists when there are at least 40 articles for review. We found that 53 papers were published regarding remanufacturing and consumer behavior. The most productive five journals have 43 percent (23 studies) of the papers. These journals are Journal of Cleaner Production, Sustainability, Business Strategy and the

**Table 2** Bibliographic sources on remanufacturing and consumer behavior

Journal	2021 Impact Factor	Ranking	No. of articles	%	Author(s)/Year
Journal of Cleaner Production	9.297	538	8	15.3	[20, 34, 38, 43, 50, 51, 66, 81]
Sustainability	3.251	4346	5	9.6	[15, 39, 44, 46, 54]
Business Strategy and The Environment	10.302	444	4	7.6	[35, 37, 53, 88]
International Journal of Production Economics	7.885	737	3	5.7	[36, 89, 94]
Resources, Conservation and Recycling	10.204	452	3	5.7	[41, 65, 90]
Frontiers in Psychology	2.990	4928	2	3.8	[13, 14]
International Journal of Physical Distribution & Logistics Management	6.309	1204	2	3.8	[18, 91]
International Journal of Production Research	8.568	634	2	3.8	[42, 87]
Production and Operations Management	4.965	2023	2	3.8	[2, 3]
Thunderbird International Business Review*	3.800	-	1	1.9	[86]
Journal of Fashion Marketing and Management	3.329	4173	1	1.9	[83]
Journal of Industrial Ecology	6.946	980	2	3.8	[16, 49]
International Journal of Trade and Global Markets*	2.000	-	1	1.9	[93]
Asia Pacific Journal of Marketing and Logistics	3.979	3091	1	1.9	[63]
California Management Review	8.836	595	1	1.9	[1]
Qualitative Market Research*	2.500	-	1	1.9	[25]
Journal of Textile Institute*	2.900	-	1	1.9	[69]
Journal of Remanufacturing*	3.000	-	1	1.9	[31]
International Journal of Business and Society*	1.200	-	1	1.9	[84]
Management Decision	4.957	2032	1	1.9	[73]
Journal of Operations Management	6.970	969	1	1.9	[4]
International Journal of Business Environment*	1.90	-	1	1.9	[74]
Technological Forecasting and Social Change	8.593	631	1	1.9	[92]
Clean Technologies and Environmental Policy	3.636	3607	1	1.9	[97]
Journal of Business Research	7.550	809	1	1.9	[19]
Decision Sciences	4.147	2834	1	1.9	[29]
International Journal of Operations & Production Management	6.629	1079	1	1.9	[55]

**Table 2** (continued)

Journal	2021 Impact Factor	Ranking	No. of articles	%	Author(s)/Year
Mathematical Problems in Engineering	1.305	10,000	1	1.9	[95]
BAR-Brazilian Administration Review*	1.100	-	1	1.9	[77]
International Journal of Integrated Supply Management*	2.200	-	1	1.9	[85]
Total	-	-	53	100	-

\* Represents Scopus impact factor and ranking

Environment, International Journal of Production Economics, and Resources, Conservation & Recycling, respectively.

Figure 2 shows the growing interest in consumer behavior toward remanufacturing. Early studies were published in 2010, and, except for 2019, the interest in the related topic increased within the last four years.

Table 3 presents the citation analysis of the articles. The most cited studies are Guide and Li [29], with 248 citations; Michaud and Llerena [53], with 164 citations; Abbey et al. [2], with 162 citations; Wang and Hazen [89], with 133 citations, and Hazen et al. (35) with 130 citations, respectively. Furthermore, Decision Sciences, Business Strategy and the Environment, Production and Operations Management, International Journal of Production Economics, and Business Strategy and the Environment are leading journals hosting the most cited studies in the related area.

## TCCM analysis of RP

### Theoretical foundations(T)

*The theory of planned behavior* is mostly used theory (11 out of 53 studies) to understand consumer behavior toward RPs [38, 39, 41, 42, 65, 66, 73, 87, 88, 91, 97]. The remaining studies benefited from various theories, which are presented in detail.

**The theory of planned behavior (TPB)** The theory has been widely applied to predict various behavior [6]. The theory of planned behavior [5] extends the Theory of Reasoned Action by adding perceived behavioral control. The theory indicates that behavioral intentions are determined by attitude, perceived behavioral control, and subjective norms [6].

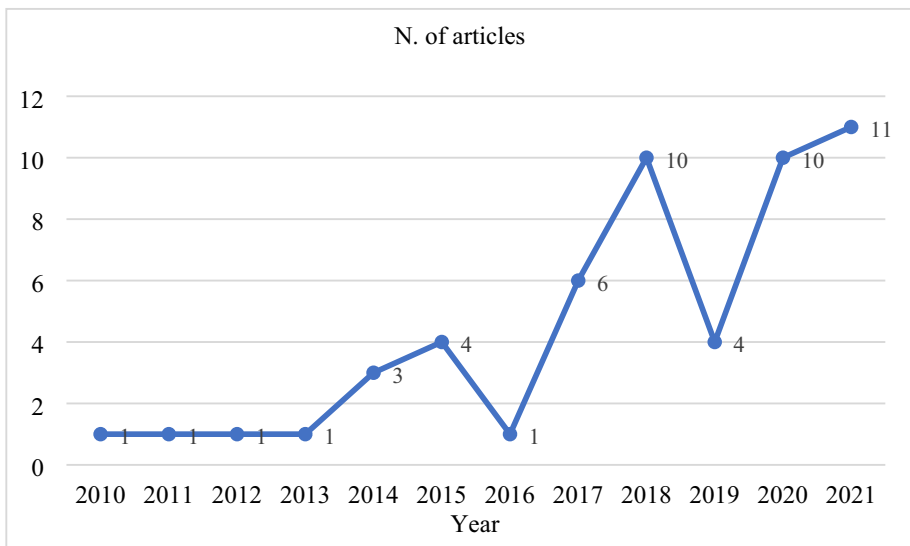


Fig. 2 Publication years of articles



**Table 3** Sample of articles and their citations

No	Author(s)/Year	Journal	Total citations*	Average Citations per year
1	Guide and Li [29]	Decision sciences	248	22.54
2	Michaud and Llerena [53]	Business Strategy and the Environment	164	16.40
3	Hazen et al. [36]	International Journal of Production Economics	117	13.00
4	Wang et al. [91]	International Journal of Physical Distribution & Logistics Management	109	13.62
5	Hamzaoui-Essoussi and Linton, 2014 [31]	Journal of Remanufacturing	31	4.42
6	Shen et al. [69]†	Journal of Textile Institute	52	7.42
7	Jimenez-Parra et al. [38]	Journal of Cleaner Production	89	12.71
8	Gaur et al. [25]	Qualitative Market Research	36	6.00
9	Abbey et al. [11]	California Management Review	47	7.83
10	Abbey et al. [2]	Production and Operations Management	162	27.00
11	Wong and Zeng [93]†	International Journal of Trade and Global Markets	15	2.50
12	Wang and Hazen [89]	International Journal of Production Economics	133	26.60
13	Khor and Hazen [42]	International Journal of Production Research	52	13.00
14	Hazen et al. [35]	Business Strategy and the Environment	130	32.50
15	Matsumoto et al. [49]	Journal of Industrial Ecology	28	7.00
16	Xu et al. [94]	International Journal of Production Economics	44	11.00
17	Abbey et al. [3]	Production and Operations Management	74	18.50
18	Vafadarnikjoo et al. [81]	Journal of Cleaner Production	40	13.33
19	Matsumoto et al. [50]	Journal of Cleaner Production	20	6.66
20	Wang et al. [88]	Business Strategy and the Environment	25	8.33
21	de Vicente Bittar [20]	Journal of Cleaner Production	27	9.00
22	Qu et al. [66]	Journal of Cleaner Production	12	4.00
23	Wang and Kuah [86]†	Thunderbird International Business Review	14	4.66
24	Vehmas et al. [83]	Journal of Fashion Marketing and Management	44	14.66
25	Wahjudi et al. [84]†	International Journal of Business and Society Management Decision	18	6.00
26	Singhal et al. [73]	Frontiers in Psychology	16	8.00
27	Chen et al. [14]	Journal of Operations Management	6	3.00
28	Abbey et al. [4]	Journal of Operations Management	10	5.00

Table 3 (continued)

No	Author(s)/Year	Journal	Total citations*	Average Citations per year
29	Souza et al. [74]†	International Journal of Business Environment	1	1.00
30	Kuah and Wang [43]	Journal of Cleaner Production	22	22.00
31	Chen et al. [13]	Frontiers in Psychology	2	2.00
32	Wang et al. [87]	International Journal of Production Research	11	11.00
33	Pitsitsankhakharn and Vassanadumrongdee [65]	Resources, Conservation and Recycling	20	20.00
34	Lee and Kwak [44]	Sustainability	1	1.00
35	Wang et al. [92]	Technological Forecasting and Social Change	3	3.00
36	Perez-Castillo and Vera-Martinez [63]	Asia Pacific Journal of Marketing and Logistics	3	3.00
37	Kabel et al. [39]	Sustainability	2	2.00
38	Kerber et al. [41]	Resources, Conservation and Recycling	-	-
39	Confente et al. [18]	International Journal of Physical Distribution & Logistics Management	-	-
40	Zhang and Luo [97]	Clean Technologies and Environmental Policy	1	1.00
41	De Silva et al. [19]†	Journal of Business Research	11	11.00
42	Ly et al. [46]	Sustainability	-	-
43	Chinen and Matsumoto [15]	Sustainability	2	2.00
44	Wang et al. [90]	Resources, Conservation and Recycling	42	14.00
45	Moosmayer et al. [55]	International Journal of Operations & Production Management	1	1.00
46	Hazen et al. [34]	Journal of Cleaner Production	44	11.00
47	Matsumoto et al. [51]	Journal of Cleaner Production	16	5.33
48	Zhang et al. [95]	Mathematical Problems in Engineering	-	-
49	Milios and Matsumoto [54]	Sustainability	9	4.50
50	Tondolo et al. [77]†	BAR-Brazilian Administration Review	-	-
51	Wahjudi et al. [85]†	Int. J. Integrated Supply Management	2	2.00
52	Hunka et al. [37]	Business, Strategy and the Environment	8	8.00
53	Chinen et al. [16]	Journal of Industrial Ecology	-	-

\* Based on Web of Science database; † represents citation numbers from Scopus database; \*\*E-data from e-bay = 23,282 auctions and 6197 fixed-price transactions

Furthermore, intention affects behavior [6]. Intention refers to performing a given behavior [5]. Attitude toward a behavior is a function of behavioral beliefs [6]. Subjective norm defines the perceived social pressure to perform or not to perform the behavior [5]. Perceived behavioral control shows the perceived ease or difficulty of performing the behavior [5].

**Theory of reasoned action** Three papers [19, 93, 95] have incorporated this theory into their studies. The theory of reasoned action [24] includes subjective norm, attitude, intention, and behavior variables.

**Economic theory** Guide and Li [29] benefited from this theory to explain the drop in the price of a new product when a remanufactured product is a substitute for the new product. Economic theory indicates that a substitute will decrease the price of another item [76].

**Pull–push–mooring theory of migration** Hazen et al. [35] used this theory in their study. The theory refers to the macroeconomic conditions that push or pull people to migrate elsewhere from their existing location and mooring factors consisting of micro-level conditions [35]. Hazen et al. [35] tried to explain why consumers intend to switch to a remanufactured product as a reason of positive (pull), negative (push), and micro-level (mooring) factors. They note price as a push factor, government incentives and environmental benefits as a pull factor, and attitude as a mooring factor.

**Prospect theory** This theory characterizes cumulative uncertainties to predict individual choices [89]. Wang and Hazen [89] used this theory as an alternative to the utility theory, which may not be adequate to explain the consumer's intention to purchase RPs due to risk and value factors.

**Theory of perceived risk** Two studies noted that they benefited from this theory [18, 91]. Perceived risk refers to the uncertainties and expectations of losses with purchasing a product [64]. These risks may involve physical, performance, financial, time, resource, and social risks [91].

**Ambiguity aversion theory** This theory underlines decision-makers preferring a known risk to an ambiguous risk [22]. Hazen et al. [36] benefited from this theory to reveal the effect of tolerance of ambiguity on the perception of RPs regarding quality or price.

**Signaling theory** Three studies used this theory [20, 34, 92]. RPs involve many uncertainties for consumers; thereby, authors benefited from signaling theory to explain consumers' concerns. Signaling theory posits that people benefit from signals to reduce uncertainties [92]. When consumers are uncertain about the quality of a remanufactured product, they look for signals such as warranty, brand, price, or seller's reputation [20].

**Utility theory, transaction cost theory, and market signal theory** Xu et al. [94] combined these theories to understand the willingness to purchase RPs. Xu et al. [94] benefit from utility theory to understand consumers' preferences toward a remanufactured product, transaction cost theory to explain the costs of purchasing a remanufactured product, and market signal theory to understand how signals convey information on RPs.

**Regulatory focus theory** Wang et al. [90] used this theory to understand consumers' purchase decisions that align with environmental thoughts. The theory refers to fulfilling internal motivations such as feeling better about themselves through consumption. Chinen et al. [16] also used this theory to understand the effect of consumers' environmental awareness and functionality orientation on the willingness to purchase RPs.

**Cognitive dissonance theory** Wang and Kuah [86] benefited from this theory to understand the actions taken by consumers to minimize inconsistencies regarding their internal contradictions about the environment or their behavior.

**Risky-choice theory** Abbey et al. [3] and Abbey et al. [4] preferred to use risky-choice theory and closed-loop supply chain research. Authors benefited from this theory to explain consumers' risk preferences regarding purchase decisions, such as risk, ambiguity, and loss aversion.

**Mental-model theory** Moosmayer et al. [55] benefited from this theory to understand RPs' lower-quality perception. The theory refers to an interpretation of reality.

**Stimulus–response model** Pisitsankhakarn and Vassanadumrongdee [65] benefited from this model to extend the TPB model. The model represents the external environment's effect on consumers' behavioral responses.

## Context (C)

Table 4 summarizes the context of articles investigated in the reviewed literature, including countries and remanufactured product types.

In this study, we employ The International Money Fund classification to distinguish two groups of countries according to their growing economic potentials, such as advanced and emerging markets. Studies in the literature primarily investigate consumer behavior toward RPs in *emerging markets* such as China, Indonesia, Thailand, Malaysia, Vietnam, Singapore, India, Myanmar, Mexico, Brazil, Portugal, and South Korea. The top three studied emerging markets are China (20 studies), Indonesia (6 studies), and Thailand (5 studies). Furthermore, studies also examined the same concept in *advanced markets* such as the US, Sweden, Japan, the UK, Spain, Finland, Canada, France, and Germany. The top three studied advanced markets are the US (12 studies), the UK (3 studies), and Japan (2 studies).

Types of RPs also differed in the studies. The top three studied RPs are auto parts, electronic products, and mobile phones. The remanufactured product type is crucial as it affects the relationships between independent variables and consumer behavior toward RPs. For instance, consumers' relative repulsion or disgust is low for technology products and high for personal care products [1].

## Characteristics (C)

We examined constructs and relationships that constitute the characteristics. We categorized the variables used in the studies into themes such as consumer-related constructs, marketing mix-related constructs, and external environment-related constructs.

**Table 4** The context of articles

	No. of articles	%	Exemplary studies
<b>Countries</b>			
<b>Advanced Markets</b>			
US	12	%24	[1–4, 20, 25, 34–36, 49, 77, 94]
UK	3	%5	[19, 37, 81]
France	1	%1	[53]
Japan	2	%3	[49, 50]
Germany	1	%1	[3]
Canada	1	%1	[31]
Spain	1	%1	[38]
Sweden	2	%3	[39, 54]
Finland	1	%1	[83]
<b>Emerging Markets</b>			
Portugal	1	%1	[74]
Brazil	1	%1	[41]
Mexico	1	%1	[63]
Korea	1	%1	[44]
Myanmar	1	%1	[86]
Malaysia	4	%7	[34, 42, 51, 86]
Vietnam	3	%5	[43, 51, 86]
Singapore	2	%3	[43, 86]
India	2	%3	[73, 86]
China	20	%37	[13, 14, 16, 18, 19, 34, 43, 46, 55, 66, 86–93, 95, 97]
Indonesia	6	%11	[15, 16, 43, 84–86]
Thailand	5	%9	[16, 43, 51, 65, 86]
<b>RP product type</b>			
Electronic	8	%15	[3, 19, 34, 36, 41, 42, 46, 94]
Technology	2	%3	[1, 2]
Electronic gadgets	3	%5	[43, 73, 86]
Computers	1	%1	[74]
Mobile phones	6	%11	[37, 63, 84, 85, 87, 88]
Smartphones	2	%3	[4, 44]
Laptops	5	%9	[20, 35, 38, 44, 92]
Tablet	1	%1	[18]
Printer	1	%1	[44]
MP4	2	%3	[13, 14]
Gaming console	1	%1	[44]
Water purifier	1	%1	[44]
Robotic lawnmower	1	%1	[39]
Single-use cameras	1	%1	[53]
Security system	1	%1	[29]
Jigsaws	1	%1	[29]
Cartridge	2	%3	[13, 93]
Household products	2	%3	[1, 2]

**Table 4** (continued)

	No. of articles	%	Exemplary studies
Personal care products	2	%3	[1, 2]
Robot vacuum cleaner	1	%1	[37]
Garment	1	%1	[83]
Auto spare parts	1	%1	[91]
Auto parts	8	%15	[15, 49–51, 54, 65, 90, 95]
Electric vehicle battery	1	%1	[77]
Vehicle parts	2	%3	[34, 36]
Engines	1	%1	[89]
Heavy-truck engines	1	%1	[66]
Automobiles with remanufactured engines	1	%1	[55]
Bike	1	%1	[81]
Industrial items	2	%3	[34, 36]

### Consumer-related constructs

Consumer-related constructs measure psychological factors that directly or indirectly affect purchase intention toward remanufactured products. Table 5 represents the studies that use consumer-related constructs. Many studied consumer-related constructs are purchase intention (34 studies), perceived risk (27 studies), knowledge (20 studies), and attitude (16 studies).

**Attitude, perceived behavioral control, purchase intention, and purchase behavior** These constructs are from the TPB model. Consumers' attitude toward RPs positively affects the intention to purchase RPs [38, 39, 42, 73, 88, 91, 95, 97]. Two studies used attitude as a mediator, and one used attitude as a moderator. For instance, some studies used attitude as a *mediator* while testing the relationship between product knowledge and intention [84], perceived risk and intention [84, 91], and perceived benefit and intention [84, 91]. Furthermore, attitude is used as a *moderator* while testing the relationship between environmental benefits, new product prices, government incentives, and switching to RPs [35]. Moreover, perceived behavioral control positively affects the intention to purchase RPs [39, 65, 88, 91, 97].

However, purchase intention does not merely depend on perceived behavioral control or attitude, it may rely on other factors, such as perceived risk [91]. Thus, five studies state that they *extend* the TPB model. For instance, Wang et al. [91] added the variables of perceived benefit, product knowledge, and perceived. Wang et al. [87] added past experiences. Pisitsankhakharn and Vassanadumrongdee [65] added product, price, place, and promotion variables. Kabel et al. [39] included marketing variables such as price advantages and expected product quality, and Zhang and Luo [97] added environmental concern and perceived risk into the TPB model.

We must note that only four studies investigated the relationship between *intention and behavior*. For instance, Khor and Hazen [42] found that the intention to purchase RPs positively affects the purchases of RPs, and energy-efficient products and negatively affects the purchase of new products. Wang et al. [88] found that purchase intention positively affects the actual purchase of RPs. Green purchase behavior positively affects switching intention to purchase RPs [63]. Moreover, hedonistic and utilitarian buying behavior affects the intention to buy RPs [25].

**Table 5** Consumer-related constructs

Constructs	N. of studies	%	Exemplary studies
Attitude	16	%30	[35, 38, 39, 42, 63, 65, 73, 74, 83–85, 87, 88, 91, 92, 95, 97]
Perceived behavioral control	7	%13	[39, 42, 65, 73, 88, 91, 97]
Purchase intention	34	%64	Intention to purchase RPs [15, 19, 20, 25, 34, 38, 39, 42, 44, 50, 51, 54, 65, 66, 73, 74, 84–91, 93, 95, 97]. Intention to switch to purchase RPs [35, 63, 92]. Purchase likelihood [3, 77]. Purchase intention from a retailer [18]. Intention to purchase new products [46]
Willingness to purchase	2	%3	Willingness to purchase certified RPs [51]. Willingness to purchase RPs [16]
Willingness to pay	10	%18	Willingness to pay for RPs [3, 4, 13, 14, 29, 36, 53, 94]. Willingness to pay a premium price remanufactured/branded RPs [31]. Willingness to pay for new products [29]
Purchase behavior	7	%13	Actual purchase of RPs [42, 88, 93]. potential purchasing behavior [66]. purchase new products [42]. purchase energy-efficient products [42]. green purchase behavior [63]. hedonistic buying behavior [25]. utilitarian buying behavior [25]
Risk	27	%50	Perceived risk [15, 18, 39, 41, 49–51, 54, 73, 74, 77, 84, 85, 87, 89, 91, 95, 97]. quality risk [14]. Lower reliability [43]. Perceived functional risk [19, 86]. Perceived probability of functionality defects [3]. Perceived probability of cosmetic defects [3]. Ambiguity tolerance [36, 88]. risk aversion [4]
Knowledge	20	%37	Product knowledge [15, 41, 50, 51, 54, 66, 73, 84, 87, 91]. Knowledge regarding the level of quality of RPs [89]. gaining knowledge of product history [92]. Perceived knowledge [49]. Information provision [81]. Energy-saving, material-saving, emission-reduction information [90]. Knowledge regarding the lower cost of RPs [89]. environmental knowledge [39]. Information about the environmental impacts of production process [53]. Green knowledge regarding RPs [86, 89]. Gaining knowledge of recapture, remanufacture and remarket processes [92]
Trust	4	%7	Trust in certified RPs [15]. Product trust [66]. No trust in remanufacturing process [43]. perceived trust [90]
Awareness	9	%16	Awareness of RPs [19, 86]. Awareness of remanufacturing [13]. Green awareness [73]. environmental awareness [14, 16, 55]. Awareness of green benefits in RPs [19]. Awareness of new products [13]
Brand-newness preferences	3	%5	Attached importance to the old and new [13]. Preference to brand new [43]. Old-product preferences [14]
Consumer types	4	%7	Only new will do consumers [1]. Green consumers [1, 2]. Functionality orientation [16]
Consumer familiarity	2	%3	[85, 88]
past experiences of RPs	3	%5	[13, 43, 87]
Concern	6	%11	Environmental concern [39, 43, 97]. Concern over sustainable fashion production and remanufacturing [69]. Attached importance to environmental protection [13]. concern about face issue [14]
Consciousness	8	%15	Environmental consciousness [19, 20, 25, 74, 86]. price consciousness [49, 50]. status consciousness [19, 86]. value-consciousness [19, 86]. face-consciousness [95]

Only Wang et al. [87] preferred to differentiate TPB constructs. They differentiated subjective norm into normative and informational social influence, attitude into experiential and instrumental attitude, perceived behavioral control into product knowledge, perceived risk, and perceived inconvenience.

**Perceived risk** Consumers may be hesitant to buy RPs as a reason for perceiving these products as too risky. This risk may be related to malfunctioning, safety, financial concerns, a possible repair, the possibility of being laughed at for using a remanufactured product, and risk resulting from a not-well-regulated market or bad reputation of remanufacturers [91]. Therefore, Wang et al. [91] state that performance, time, physical, financial, social, and resource risks are related to the perceived risks of a remanufactured product. Wahjudi et al. [85] note that there are financial (obsolescence concern, regulatory concern), quality (quality assurance, perceived quality, lack of OEM support), and social risks (prestige concern, subjective norm, public opinion, and trend concern). Chinen and Matsumoto [15] considered only physical, financial, performance, and time risks.

Perceived risk negatively affects the attitude toward RPs [39, 73, 84, 87, 91, 97] and intention to purchase RPs [15, 18, 50, 51, 74, 87, 89, 95, 97].

Abbey et al. [3] found that the perceived probability of cosmetic and functionality defects negatively affects perceived quality and purchase likelihood. Perceived functional risk negatively affects intention [19, 86]. Ambiguity tolerance positively affects perceived quality and willingness to pay [36]. Quality risk negatively affects the willingness to pay for RPs [14]. Moreover, one of the reasons that consumers don't buy RPs is because these products have lower reliability [43].

Perceived risk is also used as a *mediator*. Confente et al. [18] state that perceived risk mediates the relationship between product type (remanufactured vs. new) and purchase intention from a retailer, such that for RPs, purchase intention from a retailer is lower owing to higher perceived risk.

**Knowledge** Consumers' purchase intention may differ in each country according to their knowledge about RPs and/or the environmental contribution of these products. Therefore, product knowledge or perceived knowledge is another biggest concern. RPs may be considered second-hand or dirty products for most consumers rather than environmental-friendly products if consumers are ill-informed [42]. Furthermore, perceived knowledge of RPs differs among developing countries [51] and advanced countries [49]. Product knowledge positively affects attitude [73, 84, 91], purchase intention [50, 51, 54, 73, 84, 87], and perceived benefit [15]. Moreover, product knowledge negatively affects perceived risk [91] and directly influences demand risk [41]. On the contrary, Chinen and Matsumoto [15] couldn't find a significant relationship between product knowledge and perceived risk. Moreover, Wang et al. [91] found that product knowledge negatively influences purchase intention.

Product knowledge may include cost knowledge, green knowledge, quality knowledge [89], knowledge of price, warranty, performance, features [49], possible damages, the proportion of remanufactured components, reason for discarding, results of performance tests [81], knowledge of product history [92] or knowledge of remanufacture and remarket processes [92]. Cost knowledge positively affects perceived value and negatively affects perceived risk [89]. Green knowledge positively affects perceived value [89] and intention to purchase RPs [86]. Similarly, information including energy-saving, material-saving, and emission reduction positively affects perceived green value and perceived trust [90].



Environmental knowledge positively affects environmental concerns [39]. But, Michaud and Llerena [53] could not find a significant relationship between informing consumers about the environmental benefits of remanufacturing and willingness to pay for RPs. Quality knowledge positively affects perceived value and negatively affects perceived risk [89]. Gaining knowledge of the product history positively influences attitude [92]. Gaining knowledge of remanufacture and remarketing processes positively influence attitude [92]. Moreover, product knowledge partially *mediates* the relationship between product attributes, advertisement, and intention to purchase RPs [66].

**Trust** One of the reasons for not purchasing RPs is that consumers don't trust the remanufacturing process [43]. However, trust in certified RPs positively affects purchase intention [15]. Product trust partially *mediates* the relationship between product attributes, advertisement, and intention to purchase RPs [66].

**Awareness** Consumers' awareness of RPs [86] and awareness of green benefits in RPs positively affect purchase intention [19]. Environmental awareness positively influences willingness to pay for/purchase RPs [14, 16] and functionality orientation. However, Chen et al. [13] couldn't find a significant relationship between awareness of remanufacturing, awareness of new products, and willingness to purchase RPs. Moreover, Singhal et al. [73] couldn't find a significant relationship between green awareness and purchase intention. Moosmayer et al. [55] found that value-oriented consumers have reduced environmental awareness and choose RPs for their functional values.

**Concern** Kuah and Wang [43] reported that environmental concern, such as preserving future resources, is one reason for purchasing RPs. Zhang and Luo [97] found that environmental concern positively affects attitude, subjective norm, and perceived behavioral control. However, Kabel et al. [39] couldn't find a significant relationship between environmental concern and attitude toward RPs. Furthermore, Shen et al. [69] reported that consumers' concern over sustainable fashion production and remanufacturing has reduced since 2006. Moreover, consumers may be hesitant to purchase a remanufactured product due to their concern about face issue which represents the desire to be recognized by other people [14].

**Consciousness** Consumers who have environmental consciousness express interest in purchasing RPs [19, 25]. Environmental consciousness also increases the awareness of consumers regarding the green benefits of RPs [19]. When consumers prioritize environmental protection, they intend to purchase remanufactured functional products [13]. However, three studies [20, 74, 86] couldn't find a positive and significant relationship between environmental consciousness and purchase intention.

Price consciousness positively affects purchase intention [50]. However, price consciousness can differ among countries. For instance, US consumers are more price-conscious than Japanese consumers [49].

Status-conscious consumers intend to purchase RPs when they have more green knowledge of these products [86]. Value-conscious consumers are more likely to purchase RPs [86], and if they perceive these products as green, this relationship is strengthened [19, 86]. Status consciousness weakens the likelihood that consumers aware of their green benefits will purchase RPs [19]. Moreover, face-consciousness positively affects purchase intention [95].

**Brand-newness preferences** Preference for brand-new products is one of the reasons for not buying RPs [43]. Old product preferences affect consumers' willingness to purchase RPs [14]. When consumers attach importance to the old and new, their willingness to purchase remanufactured hedonistic products becomes lower [13].

**Consumer types** "Only new will do consumers" will purchase only new products rather than RPs [1]. Green consumers find RPs more attractive [2]. However, Abbey et al. [1] found that green consumers prefer new products. Furthermore, the functionality orientation of consumers *mediates* the relationship between environmental awareness and the willingness to purchase RPs [16].

**Consumer familiarity** Consumer familiarity refers to knowledge and past experiences regarding RPs. Wahjudi et al. [85] indicate that this construct is vital in shaping purchase intention. Consumer familiarity positively affects attitude and negatively affects intention to purchase RPs [88].

**Past experiences** Past experiences are one reason to buy RPs [43] and positively affect the intention to purchase RPs [13, 87]. However, this relationship is affirmed only for functional products by Chen et al. [13]'s study.

### Marketing mix-related constructs

Marketing mix-related constructs focus on how product, price, place, and promotion affect consumer behavior. Market strategy positively affects the intention to purchase RPs [73]. However, Jimenez-Parra et al. [38] found that marketing mix variables negatively affect the intention to purchase RPs. But they only considered purchasing online, RP design, brand reputation, and availability in conventional distribution channels, even though there are various aspects such as quality, knowledge, advertisements, price discounts, etc., regarding the marketing-mix related constructs. *Business models* like buying vs. rental also affect purchase intention [44]. The reviewed papers show us that the most studied marketing-mix-related construct is product. Others are price, place, and promotion. Table 6 represents the marketing mix-related constructs.

**Product** Product positively affects attitude toward RPs [65]. Many studied product-related constructs are attributes (17 studies), quality (16 studies), and benefits (12 studies).

Buying vs. renting RPs affect consumers' purchase intention [44].

Remanufacturer and original equipment manufacturers' (OEM) reputations motivate consumers to purchase RPs [81]. However, Michaud and Llerena [53] couldn't find a significant relationship between the identity of the remanufacturer (OEM or independent firm) and willingness to pay for RPs.

Product quality is important regarding RPs [65]. Perceptions toward the quality of a remanufactured product may stem from a perceived cosmetic or functional defect [3]. Ten studies examined *perceived quality*. Abbey et al. [1] showed with their experiments on thousands of consumers that quality perceptions are the most important factor affecting interest in RPs. Therefore, perceived quality positively affects the attractiveness of RPs [2]. Even though RPs are produced as good as new, consumers perceive these products as having lower quality and less reliability [1, 43]. Hazen et al. [34] state that the perceived quality of RPs consists of features, lifespan, performance, and serviceability. Furthermore,

**Table 6** Marketing mix-related constructs

Construct	N. of studies	%	Exemplary studies
Market strategy	1	%1	[73]
Marketing mix variables	1	%1	[38]
Business models (buying vs. rental)	1	%1	[44]
Remanufacturer	2	%3	Remanufacturer's and OEM's reputations [81], Identity of the remanufacturer (OEM or independent firm) [53]
Quality	16	%30	Perceived quality [1–3, 19, 34, 36, 41, 43, 51, 86], Expected product quality [39], Perceived quality of new products [46], expected service quality [39], quality [81, 93], Attached importance to the quality [13], Reliance on Chinese quality [14]
Values	6	%11	Perceived value [74, 77, 89], perceived green value [90], environmental values [66], individual values and attitudes [25]
Benefits	12	%22	Perceived benefits [15, 49–51, 54, 84, 85, 91], Personal benefits [73], Environmental benefits [35, 43, 63]
Attributes	17	%32	Green attribute perceptions of RPs [2], negative attribute perceptions of RPs [2], Product attributes [37, 55, 66], Warranty [81], The proportion of remanufactured components in the product [53], Environmental effect [14], Eco-label [43], Green certification [90], Quality certification [54], The level of service offered [77], Value-added services [8] repulsion or disgust effect [1], Made in effect [51], Product type (remanufactured vs. new) [18], the similarity between RPs and new products [46], functional ability [14], nature of the RP [25], RP attractiveness [2], the level of motivations toward purchasing RPs [38]
Product category	4	%7	[1, 2, 31, 44]
Product	1	%1	[65]
Brand	7	%13	Brand reputation [46], Brand equity [1, 2, 20, 39], Attached importance to the brand [13], Brand extension [95]

**Table 6** (continued)

Construct	N. of studies	%	Exemplary studies
<b>PRICE</b>			
Price perception	3	%5	[20]; negative perception [44], High perceived price of new products [92]
Attached importance to the price	1	%1	[13]
Acceptable price range	2	%3	[44]; Price ratio [20]
Price of an RP	4	%7	[65, 77, 81, 93]
New product price	2	%3	New product price [35], Higher price of brand-new products [63]
Price advantages associated with RPs	4	%7	[39]; Price discounts [1, 2]; Low cost [43]
<b>PLACE</b>			
Providing e-services of posting product condition and online seller information	1	%1	[94]
Place (Level of accessibility, multiple channels, availability on social network system)	1	%1	[65]
Lenient return policy	1	%1	[18]
Purchasing convenience	2	%3	[66]; Perceived inconvenience [87]
Retail channel type (store vs. online)	1	%1	[18]
Retailers' reputation	1	%1	[81]
Availability	1	%1	[41]
<b>PROMOTION</b>			
Informing consumers about the environmental benefits of remanufacturing	1	%1	[53]
Communication	1	%1	[83]
Promotion (Warranty system, Manufacturer reputation, Reference group)	1	%1	[65]
Advertisement	1	%1	[66]

consumers in developing countries are likely to perceive the product quality in advanced countries as superior to that in developing countries [51]. Moreover, the perceived quality of new products partially *mediates* the effect between the similarity of RPs and the purchase intention of new products [46].

Perceived quality of RPs positively affects purchase likelihood [3], willingness to pay [3, 36], and intention to purchase RPs [19, 34, 86]. Expected product quality positively affects attitude toward RPs [39]. Moreover, the perceived quality of new products has a *mediating* effect between the similarity of RPs and the purchase intention of new products [46].

Perceived value positively influences the intention to purchase RPs [74, 89]. Perceived value *moderates* the effect of price on the likelihood of purchasing an RP [77]. Moreover, perceived green value positively affects the intention to purchase RPs [90].

Environmental values affect the intention to purchase RPs [66]. Environmental values also *partially mediate* the relationship between product attributes, advertisement, and intention to purchase RPs [66]. Overall, individual values and attitudes remain important in shaping consumer behavior toward RPs [25].

Perceived benefits may constitute environmental (eco-consciousness, natural resources concern), financial (affordable price, market competition), quality (upgraded specification, perceived quality, quality assurance, product warranty), and social benefits (social expectation) [85]. Wahjudi et al. [84] used perceived benefit as an independent variable. Perceived benefit positively affects attitude toward RPs [84, 91] and intention to purchase RPs [15, 50, 51, 54, 84]. Personal benefits positively affect attitude and intention [73]. Moreover, product knowledge positively affects perceived benefit [15].

Product attributes positively affect the intention to purchase RPs [66]. The level of motivations toward purchasing RPs, such as low prices and the latest technology, positively affects purchase intention [38]. RP attractiveness is negatively affected by negative attribute perceptions of RPs such as dirty, disgusting, and unattractive [2], and positively affected by green attribute perceptions of RPs [2]. Repulsion or disgust effect can vary by product category. For instance, consumers' relative repulsion or disgust is low for technology products, moderate for household products, and high for personal care products [1]. The proportion of remanufactured components in a product doesn't influence consumers' willingness to pay for RPs [53]. Moreover, *product type* (remanufactured vs. new) positively influences perceived risk [18]. The similarity between RPs and new products negatively affects the purchase intention of new products [46].

Warranty and value-added services motivate people to buy RPs [81]. The nature of the product, such as longevity or the remanufacturing process, is important for the purchase decision [25]. The functional ability of RPs positively affects the willingness to purchase RPs [14]. Moreover, the made-in-effect is important in deciding to purchase RPs, as consumers in developing and transitioning countries are willing to purchase RPs in advanced countries [51].

Environment-related attributes are also important for consumers. For instance, the environmental effect of RPs positively affects the willingness to pay for RPs [14]. Moreover, eco-labeling is positively related to the willingness to buy RPs [43]. Green certification *moderates* the relationships between energy-saving and material-saving information and trust [90]. Moreover, consumers are more willing to purchase quality certified RPs than uncertified ones [54]. The likelihood of purchasing RPs increases with lower prices and the level of service offered [77].

Consumers' willingness to pay a premium price for RPs [31], negative perception toward RPs [44], repulsion or disgust effect differs [1], the attractiveness of RPs [2]

between product categories. For instance, while discounted prices positively affect the attractiveness of remanufactured technology, household, and personal care products, green attributes don't significantly affect remanufactured personal care product attractiveness [2].

Chen et al. [13] couldn't find a significant relationship between the importance of brand and willingness to pay for RPs. The brand equity effect of RPs by product categories is stated as complex in Abbey et al. [1]'s study.

Brand reputation *moderates* the relationship between the similarity of remanufactured products and the perceived quality of new products [46]. de Vicente Bittar [20] found that brand equity positively affects purchase intention and price perception. However, Kabel et al. [39] couldn't find a significant relationship between brand equity and attitude toward RPs. Moreover, brand equity is more strongly related to the intention to purchase RPs when the price ratio is low [20]. Furthermore, brand extension positively relates to purchase intention [95].

**Price** Positive price perception toward RPs positively affects the intention to purchase RPs [20]. Negative perceptions of RPs regarding the price differ between product categories [44]. The high perceived price of new products positively affects attitudes toward RPs [92]. Moreover, the high perceived price of new products *moderates* the relationship between gaining knowledge of the product history and attitude toward RPs; gaining knowledge of the remanufacturing process and attitude toward RPs; gaining knowledge of the remarketing process and attitude toward RPs [92].

*The attached importance of the price* positively affects the willingness to purchase RPs [13]. *Acceptable price range* is also crucial as it reflects the consumers' perception of a remanufactured product being too cheap or expensive [44]. Furthermore, while the effect of the price ratio between a remanufactured and a new product on purchase intention is essential, it depends on brand equity [20]. In the case of high brand equity, the ratio should be between 40 and 60%; but if the brand equity is low, the ratio should be below 40% [20].

Lower prices of RPs compared to new products positively affect the likelihood of purchasing an RP [77]. Price also positively affects attitude toward RPs [65].

New product price positively affects switching intention to purchase RPs [35]. However, Perez-Castillo and Vera-Martinez [63] could not find a significant relationship between these constructs.

Price advantages associated with RPs positively affect attitude toward RPs [39]. Price discounts make RPs more favorable than new products for consumers [1] and positively affect RP attractiveness. Furthermore, low cost positively relates to willingness to buy RPs [43].

**Place** Place-related constructs are tested in only six studies. Pisitsankhakarn and Vassanadumrongdee [65] could not find a significant effect of place on attitude. However, some other constructs related to the place affect attitude and intention. For instance, Confente et al. [18] found that a lenient return policy lowers perceived risk and, thus, leads to a higher purchase intention. Moreover, the perceived risk of consumers who buy RPs from a brick-and-mortar store and an online channel is equal [18]. Retailers' reputation also motivates consumers to purchase RPs [81].

Availability represents access to distribution channels, purchasing methods, and product shipping methods and influences demand risk [41]. Purchasing convenience *moderates* the relationship between purchase intention and potential purchasing behavior regarding RPs [66]. Perceived inconvenience positively affects the intention to purchase RPs [87].

Providing e-services of posting product conditions and online seller information positively influences willingness to purchase RPs [94].

**Promotion** Promotion-related constructs are tested in only four studies. Pisitsankhakarn and Vassanadumrongdee [65] couldn't find a significant relationship between *promotion* which includes warranty system, manufacturer reputation, reference group, and attitude toward RPs. Moreover, Michaud and Llerena [53] couldn't find a significant relationship between *informing* consumers about the environmental benefits of remanufacturing and the willingness to pay for RPs. However, the relationship between *advertisement* and intention to purchase RPs is significant [66]. Moreover, Vehmas et al. [83] report that *communication* is vital to convincing consumers to purchase RPs.

### External-environment related constructs

External environment-related constructs examine the factors that affect consumer purchase intention, such as government incentives, subjective norms, and socio-cultural norms. Table 7 shows the studies that examine external-environment-related constructs. Even though scholars suggest working on publicity with the government will be much beneficial [91], only three studies were concerned with the perceived importance of *government incentives* toward the purchase of RPs [35, 63], and incentive policy [66]. Perez-Castillo and Vera-Martinez [63] couldn't find a significant relationship between government incentives and switching intention to purchase RPs. However, there should be strong coordination between the industry and government to affect consumer attitudes toward RPs positively. For instance, governments and remanufacturers should assure consumers that RPs are both environmentally-friendly and have “as good as new” conditions [91]. Moreover, incentive policy *moderates* the relationship between purchasing intention and the potential purchasing behavior of RPs [66].

Furthermore, ten studies examined *subjective norms* associated with RPs, a TPB model construct. Subjective norm positively affects the intention to purchase RPs [38, 39, 42, 73, 91, 95, 97].

Socio-cultural norms also affect the intention to purchase RPs [25]. For instance, Gaur et al. [25] revealed that Indians who came to the USA reported that they came to know about such goods only after coming to the USA.

### Methodology (M)

Sample sizes considerably vary in qualitative and quantitative studies. The sample size of qualitative studies is under 100 respondents [25, 83]. On the other hand, quantitative studies used

**Table 7** External-environment related constructs

Construct	N. of studies	%	Exemplary studies
Subjective norm	10	%18	[38, 39, 42, 65, 73, 87, 88, 91, 95, 97]
Government incentives	3	%5	[35, 63, 66]
Socio-cultural norms	1	%1	[25]

a wide range of sample sizes (e.g., smallest  $n=46$ , largest  $n=1529$ ). While studies primarily benefited from consumer surveys, some used posts in online fashion forums [69] or e-data [94].

Table 8 refers to the methodology of the articles. Studies primarily used structural equation modeling (18 studies) and regression analyses (16 studies). Twelve studies implemented experiments to understand consumer behavior toward RPs, and nine used other methods. Only three papers carried out qualitative research. One study used the grounded theory as the method. Only one study benefited from a mixed-method approach.

## General Discussion

The recent growing interest in the literature on consumer behavior toward RPs has revealed the necessity of a comprehensive systematic review. This review benefits from the TCCM framework and SPAR-4-SLR protocol and addresses 53 papers retrieved from Web of Science, Scopus, and ScienceDirect on the literature regarding consumer behavior toward RPs. The theories adopted in the papers show that studies on consumer behavior toward

**Table 8** Methodology of articles

	N. of studies	%	Exemplary studies
<b>Method</b>			
Structural equation modeling	18	%33	[15, 20, 34, 36, 38, 39, 41, 42, 65, 73, 84, 88–92, 95, 97]
Experiments	12	%22	[1–4, 13, 18, 20, 29, 37, 53, 65, 77]
Regression analyses	16	%30	[2, 19, 31, 86] multiple regression analysis [74, 93]; hierarchical regression analysis [14, 35, 46, 66, 87]; heteroscedasticity-consistent OLS regression analysis [94]; ordinary least squares regression analysis [50, 51, 54]; logit regression analysis [13]; linear regression analysis [13]; multivariate linear regression analysis [66];
Other quantitative methods	9	%16	Wilcoxon two-sample test [29]; Kolmogorov–Smirnov two-sample test [29]; two-sample test [51]; t-tests [44, 49, 53, 55]; one-way ANOVA [44, 55]; frequency analysis [69]; MANOVA [43]; single valued neutrosophic sets theory [81]; fuzzy delphi method [81]; conjoint analysis; [55] cluster analysis [55];
Qualitative methods	3	%5	[25] (Grounded theory); [83, 85]
Mixed-methods	1	%1	[63]
<b>Sample Sizes</b>			
0–100	6	%11	[25, 29, 44, 53, 83, 85]
101–500	26	%49	[3, 4, 15, 18, 20, 31, 36, 39, 42, 46, 54, 55, 63, 65, 66, 74, 77, 81, 84, 87–91, 93, 95]
501–1000	9	%16	[13, 19, 34, 37, 43, 49, 50, 92, 97]
1000+	9	%16	[1, 2, 14, 16, 35, 38, 51, 73, 86]

Notes: Several studies employ multiple methods



RPs mostly benefited from the theory of planned behavior. While direct effects of attitude, perceived behavioral control, and subjective norm on intention to purchase RPs are examined, several papers used attitude as either a mediator or a moderator.

The *context* of the studies reveals that China (an emerging market) and the United States (an advanced market) are the leading countries and are widely considered in the reviewed studies. Most papers focus on consumer behavior toward remanufactured electronic products (e.g., computers, mobile phones, printers, etc.) and vehicle parts (e.g., auto spare parts, heavy truck engines, and electric vehicle batteries).

We categorize the *characteristics* of the studies into themes such as consumer-related, marketing mix-related, and external-environment-related constructs. Consumer-related constructs are the most studied constructs in the papers, followed by marketing-mix-related constructs and external-environment-related constructs. Consumer-related constructs include the most studied variables, such as attitude, knowledge, purchase intention, and perceived risk. Marketing-mix-related constructs reveal that product is the most studied element. Product is followed by price, place, and promotion. Subjective norms is the most studied construct followed by government policy in external-environment-related factors.

The *methodologies* of the papers show that sample sizes of qualitative studies are under 100 respondents, whereas this can be differentiated from 46 to 1529 in quantitative studies. Structural equation modeling is the most favorable method to examine consumer behavior toward RPs. Although many quantitative methods were chosen, only three studies employed qualitative methods, and one study benefited from a mixed-method approach.

## Directions for future research

Our detailed systematic review reveals that there is still room to improve studies in the related literature. Therefore, we propose directions for future research based on the TCCM framework and divide this section into four segments, such as the applicability of other theories (theory), potential research context (context), potential constructs and relationships (characteristics), and potential methods (methodology). Table 9 presents directions for future research and research propositions.

### Applicability of other theories

This systematic review shows that different theories may be implemented to investigate consumer behavior toward RPs apart from extending the theory of planned behavior. According to the results, the theory of perceived risk is especially beneficial in this manner. Moreover, it is essential to synthesize multiple theories [39]. Therefore, we suggest six theories that will be useful in understanding the intention to purchase RPs.

**Uses and gratification theory** This theory explains people's social and psychological needs and motivations to use social media platforms [78]. Consumers use these platforms to seek product information and suggest products to their acquaintances by generating content. Therefore, social media can influence consumers' awareness and acceptance of RPs.

**Technology acceptance model** This theory explains the factors such as perceived ease of use, perceived usefulness, attitude, and behavioral intention considering using innovative technology [96]. Ma et al. [47] benefited from this theory to understand consumers'

**Table 9** Future research agenda

Area	Future Research Direction	Research propositions
Theory	Uses and gratification theory Technology acceptance model Theory of Green Purchase Behavior Innovation Resistance Theory Health Belief Model Theory of Consumption Values	How does social media play a role in consumers' awareness and acceptance of RPs? Do perceived ease of use and perceived usefulness affect the intention to purchase RPs? How can the image of RP purchase, ecological worldview, awareness of consequences, ascription of responsibility, and past behavior in everyday life affect RP purchase behavior? How do traditional barriers affect the intention to purchase RPs? Are there different strategies to affect the purchase of RPs during a crisis like COVID-19? Is perceived threat important? How do functional, social, emotional, conditional and epistemic values play role in consumers' intention to purchase RPs? Do the factors that affect consumer behavior toward RPs differ by social classes such as middle classes or the bottom of the pyramid?
Context	Various social classes in emerging markets Remanufactured fashion Skin-contact products	Does the remanufactured fashion sector remain as a niche market? What factors affect the intention to purchase RP clothing & garment? How can companies overcome the negative attitudes toward skin-contact products such as personal care products?
Characteristics	<i>Macro forces</i> Government incentives & regulations & law Religion Economic recession or crisis <i>Meso forces</i> Promotion & greenwashing <i>Micro forces</i> Overcoming negative perceptions such as dirtiness Intention-behavior gap Second-hand products	What should governments do to create awareness toward RPs? Is there a need for a Circular Economy law for every country? How does religiosity play a role in purchasing RPs instead of new products? Which marketing strategies are beneficial for RPs that target countries in economic recession or crisis? How does economy play a role in consumers' intention to purchase RPs? Which promotional strategies are better for RPs? How can companies prevent greenwashing claims regarding RPs? Why do consumers think RPs are dirty or undesirable? Why doesn't the intention to purchase RPs lead to purchase behavior? To what extent the past experiences regarding the consumption of second-hand products have positive or negative effects on the intention to purchase RPs?

**Table 9** (continued)

Area	Future Research Direction	Research propositions
Methodology	Mixed-method approach	Conduct mixed-method studies to understand the intention to purchase RPs deeply as it differs by RP type. Start with collecting qualitative data from in-depth interviews and focus groups to develop a research model and then test the model by collecting quantitative data
	Longitudinal studies	Intention to purchase RPs may differ by the country's economic progression. Forming the infrastructure toward product recovery options will take a long time especially for emerging markets, therefore collecting longitudinal data to understand the changes in consumers' behavior
	Field studies	Collect data by observing and taking field notes in where consumers purchase RPs

intention to buy apparel products with a sustainability label. Thus, the perceived ease of use and perceived usefulness of RPs can affect the intention to purchase RPs. This finding can differ between users and non-users of RPs.

**Theory of green purchase behavior** This theory explains consumers' environmental buying behavior [32]. RPs are considered green products and contribute to the environment by helping decrease waste. Therefore, the image of RP purchase, ecological worldview, awareness of consequences, the ascription of responsibility, and past behavior in everyday life can affect attitude toward RPs and RP purchase behavior.

**Innovation resistance theory** This theory addresses barriers that lead consumers to resist innovation [26]. Traditional barriers reflect the underpinnings of the consumer's belief system, which conflicts with accepting innovative products such as green products [26]. Therefore, traditional barriers can affect the intention to purchase RPs.

**Health belief model** This model reflects the perceived threat of a disease which may lead consumers to change their behavior [26]. Consumers can perceive RPs as dirty [1]. Thus, the perceived threat can be significant for consumers during an RP purchase. So, there should be different marketing strategies to affect the purchase of RPs during a crisis like COVID-19.

**Theory of consumption values** This theory explains the functional, social, emotional, conditional, and epistemic values that influence consumers' intention to purchase certain products [70]. Studies [27, 45] show that the theory of consumption values can explain consumers' choice to purchase green products. Thus, consumption values can affect the purchase of RPs.

## Potential research context

Directions for future research regarding *the context* reveal that even though most studies focus on electronic products and vehicle parts, there is a huge gap in examining products in *remanufactured fashion*. Consumers may perceive some RPs as undesirable in many ways, such as disgusting and dirty [1]. To create awareness, COS, an H&M brand, uses old fabric from unsold clothes to remanufacture new clothes [30]. The remanufactured fashion sector remains a niche market even in the UK [21]. Therefore, examining the factors that affect the attitude toward remanufactured clothing products & garments will benefit future attempts. Moreover, there should be additional studies on skin-contact products such as personal care products. Furthermore, it is essential to examine multiple RPs simultaneously to reveal differences and similarities regarding consumer behavior toward RPs [39].

There is a growing interest in studying consumer behavior toward RPs in emerging markets compared to advanced markets. Consumers in advanced markets such as the USA or European countries are used to concepts such as remanufacturing or recycling. While the majority of the studies are carried out in China, there should be more studies on other emerging markets. It is worth studying the perception of middle-class consumers who have gained substantial disposable income and experienced substantial lifestyle changes since the neoliberal policies which commenced in the 1980s [9, 79] or the bottom of the pyramid.

## Potential constructs and relationships

Directions for future research regarding *the characteristics* reveal that consumer-related constructs such as knowledge, perceived risk, and awareness are crucial when shaping consumers' attitudes or purchase intentions related to RPs. Remanufacturers should make their processes more transparent to be thoroughly understood by consumers and make sure that their products are in "as good as new" condition [36]. More studies should examine macro, meso, and micro forces that can play a role in the consumers' RP purchase decision process.

### Macro forces

According to the results of our systematic review, we observed that a limited number of studies examined the effect of government incentives. Governments, conversely, can guide the intention toward RPs by advertising them "as good as new" and informing consumers about the remanufacturing process [89]. Therefore, it is essential to examine the government's effect on consumers' attitudes toward RPs. Moreover, the need for a Circular Economy law should be considered when forming semi-structured interviews.

Religion enhances people's moral values and thus affects sustainable behavior [56]. Religiosity influences green product attributes and enhances environmental concerns and knowledge [75]. Therefore, it is worth examining the role of religiosity on consumers' decision to purchase RPs instead of new products.

The purchase of second-hand products increases during an economic crisis [40]. While consumers consider their budget, are they willing to purchase RPs? It's essential to examine the economy's role in consumer behavior and the marketing strategies beneficial for RPs that target countries in economic recession or crisis.

### Meso forces

Even though the reviewed studies underline the importance of product and price-related constructs such as quality, attributes, or price of an RP, there should be more studies examining the effects of promotion. Promotion and education help alleviate consumers' negative perceptions toward RPs [1]. Advertising, mailings, and in-store labeling can educate consumers about the environmental and monetary value of RPs [90]. Moreover, future research should examine how companies can prevent greenwashing claims regarding RPs.

### Micro forces

Abbey et al. [1, 2] found that consumers think RPs as dirty, disgusting, or undesirable, which differs by product category. Therefore, it's worth examining this negative effect deeply for various product categories, mainly by conducting in-depth interviews and collecting data from focus groups.

There are only a few studies examining the intention-behavior relationship. Even though consumers intend to purchase RPs, they may not purchase RPs because of quality, price, or value concerns [42]. Therefore, the relationship between intention and behavior should be examined deeply in future studies.

Most consumers cannot understand the difference between RPs and second-hand products [14]. Therefore, further studies should examine whether past experiences regarding

the consumption of second-hand products have positive or negative effects on the intention to purchase RPs.

## Potential methods

Directions for future research regarding *the methodology* show that the reviewed papers are mostly quantitative. Future studies should employ *mixed-method approaches* to understand the intention toward RPs. By beginning with qualitative research and continuing with quantitative analysis, we will unlock a deeper understanding of consumer behavior toward RPs. Moreover, *longitudinal studies* can be conducted to compare different periods, allowing researchers to gain further insights [18, 42, 91]. Intention to purchase RPs may differ by the country's economic progression. Forming the infrastructure for product recovery options will take a long time, especially for emerging markets. Therefore, collecting longitudinal data to understand consumer behavior changes will bring valuable insights. Furthermore, collecting data by observing and taking field notes on where consumers purchase RPs and, thus, carrying a *field study* will be beneficial.

## Conclusion

Circular Economy is a new philosophy to lead companies and society to keep materials and products by enabling environment-friendly processes in circulation. Among these processes, remanufacturing is a significant way to reuse many products, including replacing components or reprocessing used parts. Although remanufacturing provides considerable strategic advantages (e.g., low costs, waste reduction) for companies, several factors (e.g., low-quality perception, and suspicion about the performance of the RPs) may negatively affect these advantages. Although consumer behavior toward RPs is a relatively new research area, it is getting more attention from academics and practitioners.

This study provides the first detailed and comprehensive systematic review of related studies on consumer behavior toward RPs while employing the TCCM framework in the related literature. According to the results of the TCCM framework, studies mostly employed the theory of planned behavior, to examine consumer behavior toward RPs. However, it is important to benefit from multiple theories. The reviewed studies consider consumer behavior toward RPs mainly in emerging (e.g., China, Taiwan, etc.) markets. Studies primarily investigate RPs of auto parts, electronic products, and mobile phones. We categorized the constructs in the reviewed studies under three themes; consumer-related constructs, marketing mix-related constructs, and external environment-related constructs.

The systematic review indicates that there is still room for future studies by adapting various theories to examine consumer behavior toward RPs. In addition, macro, meso, and micro forces may play a role in the consumers' RP purchase decision process. Finally, mixed-method approaches and longitudinal studies may help researchers to provide new insights into consumer behavior toward RPs.

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## References

1. Abbey JD, Meloy MG, Blackburn J, Guide VDR Jr (2015) Consumer markets for remanufactured and refurbished products. *Calif Manage Rev* 57:26–42
2. Abbey JD, Meloy MG, Guide VDR Jr, Atalay S (2015) Remanufactured products in closed-loop supply chains for consumer goods. *Prod Oper Manag* 24:488–503. <https://doi.org/10.1111/poms.12238>
3. Abbey JD, Kleber R, Souza GC, Voigt G (2017) The role of perceived quality risk in pricing remanufactured products. *Prod Oper Manag* 26:100–115. <https://doi.org/10.1111/poms.12628>
4. Abbey JD, Kleber R, Souza GC, Voigt G (2019) Remanufacturing and consumers' risky choices: Behavioral modeling and the role of ambiguity aversion. *J Oper Manag* 65:4–21. <https://doi.org/10.1002/joom.1001>
5. Ajzen I (1991) The theory of planned behavior. *Organ Behav Hum Decis Process* 50:179–211
6. Ajzen I (2020) The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies* 2(4):314–324
7. Ameen N, Sharma GD, Tarba S, Rao A, Chopra R (2022) Toward advancing theory on creativity in marketing and artificial intelligence. *Psychol Mark* 39:1802–1825. <https://doi.org/10.1002/mar.21699>
8. Atasu A, Sarvary M, Van Wassenhove LN (2008) Remanufacturing as a marketing strategy. *Manage Sci* 54(10):1731–1746. <https://doi.org/10.1287/mnsc.1080.0893>
9. Belbağ AG, Ünner MM, Cavusgil E, Cavusgil ST (2019) The new middle class in emerging markets: How values and demographics influence discretionary consumption. *Thunderbird International Business Review* 61(2):325–337. <https://doi.org/10.1002/tie.21980>
10. Bigliardi B, Campisi D, Ferraro G, Filippelli S, Galati F, Petroni A (2020) The intention to purchase recycled products: Towards an integrative theoretical framework. *Sustainability* 12(22):1–20. <https://doi.org/10.3390/su12229739>
11. Bindra S, Sharma D, Parameswar N, Dhir S, Paul J (2022) Bandwagon effect revisited: A systematic review to develop future research agenda. *J Bus Res* 143:305–317
12. Camacho-Otero J, Boks C, Pettersen IN (2018) Consumption in the circular economy: A literature review. *Sustainability* 10(8):1–25. <https://doi.org/10.3390/su10082758>
13. Chen Y, Wang J, Jia X (2020) Refurbished or remanufactured? an experimental study on consumer choice behavior. *Front Psychol* 11:1–11. <https://doi.org/10.3389/fpsyg.2020.00781>
14. Chen Y, Wang J, Yu Y (2019) A study on consumers' willingness to pay for remanufactured products: a study based on hierarchical regression method. *Front Psychol* 10:1–9. <https://doi.org/10.3389/fpsyg.2019.02044>
15. Chinen K, Matsumoto M (2021) Indonesians' perceptions of auto parts remanufactured in China: Implications for global remanufacturing operations. *Sustainability* 13:1–16. <https://doi.org/10.3390/su13073968>
16. Chinen K, Matsumoto M, McQuitty S, Kojima M (2021) The mediating role of functionality orientation for purchasing remanufactured products: Cases in China, Indonesia, and Thailand. *J Ind Ecol* 26:536–547. <https://doi.org/10.1111/jiec.13201>
17. Chintalapati S, Pandey SK (2022) Artificial intelligence in marketing: A systematic literature review. *Int J Mark Res* 64(1):38–68. <https://doi.org/10.1177/14707853211018428>
18. Confente I, Russo I, Peinkofer S, Frankel R (2021) The challenge of remanufactured products: the role of returns policy and channel structure to reduce consumers' perceived risk. *Int J Phys Distrib Logist Manag* 51(4):350–380. <https://doi.org/10.1108/IJPDLM-03-2020-0089>

19. de Silva M, Wang P, Kuah AT (2021) Why wouldn't green appeal drive purchase intention? moderation effects of consumption values in the UK and China. *J Bus Res* 122:713–724. <https://doi.org/10.1016/j.jbusres.2020.01.016>
20. de Vicente Bittar A (2018) Selling remanufactured products: does consumer environmental consciousness matter? *J Clean Prod* 181:527–536. <https://doi.org/10.1016/j.jclepro.2018.01.255>
21. Dissanayake G, Sinha P (2015) An examination of the product development process for fashion remanufacturing. *Resources Conservation and Recycling* 104:94–102. <https://doi.org/10.1016/j.resconrec.2015.09.008>
22. Ellsberg D (1961) Risk, ambiguity, and the savage axioms. *Quart J Econ* 75(4):643–669. <https://doi.org/10.2307/1884324>
23. European Commission (2021) Packaging waste Available from environment/ topics/ waste-and-recycling/packaging-waste\_en#:~:text=Background,placed%20on%20the%20European%20market.&text=All%20packaging%20placed%20on%20the,and%20reusable%20or%20recoverable%20nature
24. Fishbein M, Ajzen I (1975) *Belief, Attitude, Intention and Behavior*. Addison-Wesley, Reading, MA
25. Gaur J, Amini M, Banerjee P, Gupta R (2015) Drivers of consumer purchase intentions for remanufactured products: A study of Indian consumers relocated to the USA. *Qualitative Market Research* 18(1):30–47. <https://doi.org/10.1108/QMR-01-2014-0001>
26. George, A, Nair, AS (2022) Reflections on Green Purchase Behaviour in the Era of COVID-19 A Conceptual Framework *Vision* 1–16. <https://doi.org/10.1177/09722629221087363>
27. Gonçalves HM, Lourenço TF, Silva GM (2016) Green buying behavior and the theory of consumption values: A fuzzy-set approach. *J Bus Res* 69(4):1484–1491. <https://doi.org/10.1016/j.jbusres.2015.10.129>
28. Govindan K, Jimenez-Parra B, Rubio S, Vicente-Molina MA (2019) Marketing issues for remanufactured products. *J Clean Prod* 227:890–899. <https://doi.org/10.1016/j.jclepro.2019.03.305>
29. Guide VDR Jr, Li J (2010) The Potential for Cannibalization of New Products Sales by Remanufactured Products. *Decis Sci* 41:547–572. <https://doi.org/10.1111/j.1540-5915.2010.00280.x>
30. H&M (2021) H&M Group Sustainability Performance Report <https://hmgroupp.com/wp-content/uploads/2021/03/HM-Group-Sustainability-Performance-Report-2020.pdf>
31. Hamzaoui-Essoussi L, Linton JD (2014) Offering branded remanufactured/recycled products: at what price? *Journal of Remanufacturing* 4:1–15. <https://doi.org/10.1186/s13243-014-0009-9>
32. Han H (2020) Theory of green purchase behavior (TGPB): A new theory for sustainable consumption of green hotel and green restaurant products. *Bus Strateg Environ* 29(6):2815–2828. <https://doi.org/10.1002/bse.2545>
33. Hassan SM, Rahman Z, Paul J (2022) Consumer ethics: A review and research agenda. *Psychol Mark* 39(1):111–130. <https://doi.org/10.1002/mar.21580>
34. Hazen BT, Boone CA, Wang Y, Khor KS (2017) Perceived quality of remanufactured products: construct and measure development. *J Clean Prod* 142:716–726. <https://doi.org/10.1016/j.jclepro.2016.05.099>
35. Hazen BT, Mollenkopf DA, Wang Y (2017) Remanufacturing for the circular economy: An examination of consumer switching behavior. *Bus Strateg Environ* 26:451–464. <https://doi.org/10.1002/bse.1929>
36. Hazen BT, Overstreet RE, Jones-Farmer LA, Field HS (2012) The role of ambiguity tolerance in consumer perception of remanufactured products. *Int J Prod Econ* 135(2):781–790. <https://doi.org/10.1016/j.ijpe.2012.01.030>
37. Hunka AD, Linder M, Habibi S (2021) Determinants of consumer demand for circular economy products A case for reuse and remanufacturing for sustainable development. *Business Strategy and the Environment* 30(1):535–550. <https://doi.org/10.1002/bse.2636>
38. Jimenez-Parra B, Rubio S, Vicente-Molina MA (2014) Key drivers in the behavior of potential consumers of remanufactured products: a study on laptops in Spain. *J Clean Prod* 85:488–496. <https://doi.org/10.1016/j.jclepro.2014.05.047>
39. Kabel D, Elg M, Sundin E (2021) Factors influencing sustainable purchasing behaviour of remanufactured robotic lawn mowers. *Sustainability* 13:1–16. <https://doi.org/10.3390/su13041954>
40. Kaytaz M, Gul MC (2014) Consumer response to economic crisis and lessons for marketers: The Turkish experience. *J Bus Res* 67(11):2701–2706. <https://doi.org/10.1016/j.jbusres.2013.03.019>
41. Kerber JC, de Souza ED, Bouzouf M, Cruz RM, Govindan K (2021) Consumer behaviour aspects towards remanufactured electronic products in an emerging economy: effects on demand and related risks. *Resour Conserv Recycl* 170:1–10. <https://doi.org/10.1016/j.resconrec.2021.105572>



42. Khor KS, Hazen BT (2017) Remanufactured products purchase intentions and behaviour: Evidence from Malaysia. *Int J Prod Res* 55:2149–2162. <https://doi.org/10.1080/00207543.2016.1194534>
43. Kuah AT, Wang P (2020) Circular economy and consumer acceptance: an exploratory study in east and southeast Asia. *Journal of Cleaner Production* 247:119097. <https://doi.org/10.1016/j.jclepro.2019.119097>
44. Lee S, Kwak M (2020) Consumer valuation of remanufactured products: A comparative study of product categories and business models. *Sustainability* 12:1–29. <https://doi.org/10.3390/su12187581>
45. Lin PC, Huang YH (2012) The influence factors on choice behavior regarding green products based on the theory of consumption values. *J Clean Prod* 22(1):11–18. <https://doi.org/10.1016/j.jclepro.2011.10.002>
46. Lv J, Liu X, Cheng S (2021) The impact of remanufactured products' similarity on purchase intention of new products. *Sustainability* 13:1–12. <https://doi.org/10.3390/su13041825>
47. Ma YJ, Gam HJ, Banning J (2017) Perceived ease of use and usefulness of sustainability labels on apparel products: application of the technology acceptance model. *Fashion and Textiles* 4(1):1–20. <https://doi.org/10.1186/s40691-017-0093-1>
48. Mandler T, Sezen B, Chen J, Özsoy A (2021) Performance consequences of marketing standardization/adaptation: A systematic literature review and future research agenda. *J Bus Res* 125:416–435. <https://doi.org/10.1016/j.jbusres.2020.12.023>
49. Matsumoto M, Chinen K, Endo H (2017) Comparison of US and Japanese consumers' perceptions of remanufactured auto parts. *J Ind Ecol* 21:966–979. <https://doi.org/10.1111/jiec.12478>
50. Matsumoto M, Chinen K, Endo H (2018) Remanufactured auto parts market in Japan: Historical review and factors affecting green purchasing behavior. *J Clean Prod* 172:4494–4505. <https://doi.org/10.1016/j.jclepro.2017.10.266>
51. Matsumoto M, Chinen K, Endo H (2018) Paving the way for sustainable remanufacturing in Southeast Asia: An analysis of auto parts markets. *J Clean Prod* 205:1029–1041. <https://doi.org/10.1016/j.jclepro.2018.09.074>
52. McKinsey (2021) Towards a circular economy Available from [https://www.mckinsey.com/~media/mckinsey/dotcom/client\\_service/sustainability/pdfs/towards\\_the\\_circular\\_economy.ashx](https://www.mckinsey.com/~media/mckinsey/dotcom/client_service/sustainability/pdfs/towards_the_circular_economy.ashx)
53. Michaud C, Llerena D (2011) Green Consumer Behaviour: an Experimental Analysis of Willingness to Pay for Remanufactured Products. *Bus Strateg Environ* 20:408–420. <https://doi.org/10.1002/bse.703>
54. Milios L, Matsumoto M (2019) Consumer perception of remanufactured automotive parts and policy implications for transitioning to a circular economy in Sweden. *Sustainability* 11(22):1–15. <https://doi.org/10.3390/su11226264>
55. Moosmayer DC, Abdulrahman MDA, Subramanian N, Bergkvist L (2020) Strategic and operational remanufacturing mental models: A study on Chinese automotive consumers' buying choice. *Int J Oper Prod Manag* 40(2):173–195. <https://doi.org/10.1108/IJOPM-12-2018-0684>
56. Orellano A, Valor C, Chuvieco E (2020) The influence of religion on sustainable consumption: A systematic review and future research agenda. *Sustainability* 12(19):1–21. <https://doi.org/10.3390/su12197901>
57. Patwa N, Sivarajah U, Seetharaman A, Sarkar S, Maiti K, Hingorani K (2021) Towards a circular economy: An emerging economies context. *J Bus Res* 122:725–735. <https://doi.org/10.1016/j.jbusres.2020.05.015>
58. Paul J, Criado AR (2020) The art of writing literature review: What do we know and what do we need to know? *Int Bus Rev* 29(4):1–7. <https://doi.org/10.1016/j.ibusrev.2020.101717>
59. Paul J, Feliciano-Cestero MM (2021) Five decades of research on foreign direct investment by MNEs: An overview and research agenda. *J Bus Res* 124:800–812. <https://doi.org/10.1016/j.jbusres.2020.04.017>
60. Paul J, Lim WM, O' Cass A, Hao AW, Bresciani S (2021) Scientific procedures and rationales for systematic literature reviews (SPAR-4-SLR). *Int J Consum Stud* 45(4):1–16. <https://doi.org/10.1111/ijcs.12695>
61. Paul J, Rosado-Serrano A (2019) Gradual internationalization vs born-global / international new venture models: A review and research agenda. *Int Mark Rev* 36(6):830–858. <https://doi.org/10.1108/IMR-10-2018-0280>
62. Paul J, Singh G (2017) The 45 years of foreign direct investment research: Approaches, advances and analytical areas. *The World Economy* 40(11):2512–2527. <https://doi.org/10.1111/twec.12502>
63. Perez-Castillo D, Vera-Martinez J (2021) Green behaviour and switching intention towards remanufactured products in sustainable consumers as potential earlier adopters. *Asia Pac J Mark Logist* 33(8):1776–1797. <https://doi.org/10.1108/APJML-10-2019-0611>
64. Peter JP, Ryan MJ (1976) An investigation of perceived risk at the brand level. *J Mark Res* 13(2):184–188. <https://doi.org/10.1177/002224377601300210>

65. Pisitsankhakarn R, Vassanadumrongdee S (2020) Enhancing purchase intention in circular economy: An empirical evidence of remanufactured automotive product in Thailand. *Resour Conserv Recycl* 156:1–11. <https://doi.org/10.1016/j.resconrec.2020.104702>
66. Qu Y, Liu Y, Guo L, Zhu Q, Tseng M (2018) Promoting remanufactured heavy-truck engine purchase in China: Influencing factors and their effects. *J Clean Prod* 185:86–96. <https://doi.org/10.1016/j.jclepro.2018.02.188>
67. Randolph J (2009) A guide to writing the dissertation literature review. *Pract Assess Res Eval* 14(1):1–13. <https://doi.org/10.7275/b0az-8t74>
68. Schallehn H, Seuring S, Strähle J, Freise M (2019) Customer experience creation for after-use products: A product–service systems-based review. *J Clean Prod* 210:929–944. <https://doi.org/10.1016/j.jclepro.2018.10.292>
69. Shen B, Zheng JH, Chow PS, Chow KY (2014) Perception of fashion sustainability in online community. *Journal of Textile Institute* 105:971–979. <https://doi.org/10.1080/00405000.2013.866334>
70. Sheth JN, Newman BI, Gross BL (1991) Why we buy what we buy: A theory of consumption values. *J Bus Res* 22(2):159–170. [https://doi.org/10.1016/0148-2963\(91\)90050-8](https://doi.org/10.1016/0148-2963(91)90050-8)
71. Singh S, Dhir S (2019) Structured review using TCCM and bibliometric analysis of international cause-related marketing, social marketing, and innovation of the firm. *International Review on Public and Nonprofit Marketing* 16(2):335–347. <https://doi.org/10.1007/s12208-019-00233-3>
72. Singhal D, Jena SK, Tripathy S (2019) Factors influencing the purchase intention of consumers towards remanufactured products: a systematic review and meta-analysis. *Int J Prod Res* 57:7289–7299. <https://doi.org/10.1080/00207543.2019.1598590>
73. Singhal D, Tripathy S, Jena SK (2019) Acceptance of remanufactured products in the circular economy: an empirical study in India. *Manag Decis* 57(4):953–970. <https://doi.org/10.1108/MD-06-2018-0686>
74. Souza JDL, Tondolo VAG, Sarquis AB, Longaray AA, Tondolo RDRP, Costa LMD (2020) Effect of perceived value, risk, attitude, and environmental consciousness on the purchase intention. *Int J Bus Environ* 11:11–31. <https://doi.org/10.1504/IJBE.2020.105466>
75. Suhartanto, D, Dean, D, Amalia, FA, Triyuni, NN (2022) Attitude formation towards green products evidence in Indonesia integrating environment culture and religion Asia Pacific Business Review 1–21 <https://doi.org/10.1080/13602381.2022.2082715>
76. Tirole J (1988) *The theory of industrial organization*. MIT Press, Cambridge, MA
77. Tondolo VAG, Paiva EL, Tondolo RDRP, Santos JB (2021) Servitization as a strategy for remanufacturing: An experimental study. *BAR-Brazilian Administration Review* 18(3):1–26. <https://doi.org/10.1590/1807-7692bar2021210004>
78. Tran LTT (2021) Managing the effectiveness of e-commerce platforms in a pandemic. *J Retail Consum Serv* 58:1–9. <https://doi.org/10.1016/j.jretconser.2020.102287>
79. Uner MM, Gungordu A (2016) The new middle class in Turkey: A qualitative study in a dynamic economy. *Int Bus Rev* 25(3):668–678. <https://doi.org/10.1016/j.ibusrev.2015.11.002>
80. UNIDO (2021) Circular Economy Available from [https://www.unido.org/sites/default/files/2017-07/Circular\\_Economy\\_UNIDO\\_0.pdf](https://www.unido.org/sites/default/files/2017-07/Circular_Economy_UNIDO_0.pdf)
81. Vafadarnikjoo A, Mishra N, Govindan K, Chalvatzis K (2018) Assessment of consumers’ motivations to purchase a remanufactured product by applying fuzzy delphi method and single valued neutrosophic sets. *J Clean Prod* 196:230–244. <https://doi.org/10.1016/j.jclepro.2018.06.037>
82. Vasanthakumar C, Vinodh S, Ramesh K (2016) Application of interpretive structural modelling for analysis of factors influencing lean remanufacturing practices. *Int J Prod Res* 54:7439–7452. <https://doi.org/10.1080/00207543.2016.1192300>
83. Vehmas K, Raudaskoski A, Heikkilä P, Harlin A, Mensonen A (2018) Consumer attitudes and communication in circular fashion. *J Fash Mark Manag* 22(3):286–300. <https://doi.org/10.1108/JFMM-08-2017-0079>
84. Wahjudi D, Gan SS, Anggono J, Tanoto YY (2018) Factors affecting purchase intention of remanufactured short life-cycle products. *International Journal of Business and Society* 19(2):415–428
85. Wahjudi D, Gan SS, Tanoto YY, Winata J (2020) Drivers and barriers of consumer purchase intention of remanufactured mobile phones: a study on Indonesian consumers. *International Journal of Integrated Supply Management* 13(2–3):178–191. <https://doi.org/10.1504/IJISM.2020.107847>
86. Wang P, Kuah AT (2018) Green marketing cradle-to-cradle: Remanufactured products in Asian markets. *Thunderbird International Business Review* 60:783–795. <https://doi.org/10.1002/tie.21925>
87. Wang S, Wang J, Yang F, Li J, Song J (2020) Determinants of consumers’ remanufactured products purchase intentions: Evidence from China. *Int J Prod Res* 58:2368–2383. <https://doi.org/10.1080/00207543.2019.1630767>

88. Wang S, Wang J, Yang F, Wang Y, Li J (2018) Consumer familiarity, ambiguity tolerance, and purchase behavior toward remanufactured products: The implications for remanufacturers. *Bus Strateg Environ* 27:1741–1750. <https://doi.org/10.1002/bse.2240>
89. Wang Y, Hazen BT (2016) Consumer product knowledge and intention to purchase remanufactured products. *Int J Prod Econ* 181:460–469. <https://doi.org/10.1016/j.ijpe.2015.08.031>
90. Wang Y, Huscroft JR, Hazen BT, Zhang M (2018) Green information, green certification and consumer perceptions of remanufactured automobile parts. *Resour Conserv Recycl* 128:187–196. <https://doi.org/10.1016/j.resconrec.2016.07.015>
91. Wang Y, Wiegerinck V, Krikke H, Zhang H (2013) Understanding the purchase intention towards remanufactured product in closed-loop supply chains: an empirical study in China. *Int J Phys Distrib Logist Manag* 43:866–888. <https://doi.org/10.1108/IJPDLM-01-2013-0011>
92. Wang Y, Zhu Q, Krikke H, Hazen B (2020) How product and process knowledge enable consumer switching to remanufactured laptop computers in circular economy. *Technol Forecast Soc Chang* 161:1–13. <https://doi.org/10.1016/j.techfore.2020.120275>
93. Wong WM, Zeng XY (2015) Price and quality of remanufactured products related to consumer behaviour. *International Journal of Trade and Global Markets* 8:17–26. <https://doi.org/10.1504/IJTM.2015.067970>
94. Xu X, Zeng S, He Y (2017) The influence of e-services on customer online purchasing behavior toward remanufactured products. *Int J Prod Econ* 187:113–125. <https://doi.org/10.1016/j.ijpe.2017.02.019>
95. Zhang S, Zhou C, Liu Y (2020) Consumer purchasing intentions and marketing segmentation of remanufactured new-energy auto parts in China. *Math Probl Eng* 2020:1–8. <https://doi.org/10.1155/2020/5647383>
96. Zhang W, Liu L (2022) How consumers' adopting intentions towards eco-friendly smart home services are shaped? An extended technology acceptance model. *Ann Reg Sci* 68(2):307–330. <https://doi.org/10.1007/s00168-021-01082-x>
97. Zhang W, Luo B (2021) Do environmental concern and perceived risk contribute to consumers' intention toward buying remanufactured products? an empirical study from China. *Clean Technol Environ Policy* 23:463–474. <https://doi.org/10.1007/s10098-021-02061-8>

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