

Adoption of Circular Economy in India's Passenger Car Sector: A Systematic Literature Review

¹Ms. Sammi kumari, ²Dr. Akshat Aditya Rao

¹Research Scholar, School of Management and Liberal Studies, The Northcap University, Gurugram HR

²Professor of Marketing, School of Management and Liberal Studies, The Northcap University, Gurugram HR

Abstract - This paper provides an in-depth SLR on the topic of implementing CE among passenger car clients in India, including the synthesis of 65 articles published in 2014-25. The study will seek to determine the major drivers, barriers to and consumer behaviour pattern in adopting CE, and the implication to the policymakers and industry stakeholders. Relevant articles were obtained based on PRISMA framework within databases. The theoretical lenses that have been incorporated in the review include the TPB, TAM, and VBN, which demonstrate the high gaps in consumer-oriented CE studies, especially in the Indian case. Descriptive and thematic synthesis revealed that the key enablers of CE adoption are environmental awareness, economic incentives, brand influence and demographics. Perceived product risk, lack of awareness, cultural resistance on reused products, and limit on policy/infrastructure are crucial obstacles. The paper further classifies the existing condition of CE practices, like remanufactured products, recycling, shared mobility, and product-service systems, and addresses the attitudes, perception, and dynamics of trust among the consumers. Comparative knowledge to suggest that global CE adoption is facilitated by a strong policy and consumer trust, India is confronted with some contextual issues such as social-cultural norms, ineffective implementation of regulations and low consumer literacy. The review has a theoretical contribution because it demands additional studies on behaviour and longitudinal ones as well as practical benefit because it provides policy and industry-specific recommendations. Lastly, it is suggested that further studies should be conducted on empirical knowledge of CE adoption, especially in emergent electric vehicle market of India. The study provides a strategic base to the creation of consumer-based inclusive CE solutions in the Indian automobile industry.

Keywords - Circular Economy (CE), Consumer Behaviour, Passenger Cars, Sustainable Mobility, Theory of Planned Behaviour (TPB), CE Adoption Barriers, Behavioural Intentions.

I. INTRODUCTION

CE is a revolutionary model that seeks to define growth differently by separating economic activity and use of finite resources. It encourages sustainability by reusing, remanufacturing, recycling, and sharing products (Geissdoerfer, 2017). Due to the excessive consumption of resources, high greenhouse emissions, and generation of a huge amount of waste at its end, CE practices have become significant in all parts of the world within the automobile industry (Araujo-Morera, 2021). Individuals are beginning to understand the

significance of CE to the long-term existence and ability to compete in India, including within the booming car market in the country (Mangla, 2021). Research should understand customer behaviour in order to accelerate transition to CE in the passenger car industry in India (Hazel, 2020). The literature is mostly centered on the manufacturing process, legal frameworks and supply chain logistics without taking into consideration the consumer perspective (Singh, 2019). On the part of the customer, study adds to literature review by identifying key elements that contribute to success or failure of the adoption of CE. It also examines the influencing factors on decision-making of people and how people react to seeing circular products and services (Sonar, 2022). The data

can be used by the politicians and automobile companies to organize specific programs and advance the use of environmentally friendly options by consumers. CE is a regenerative economic approach based on maximizing the resources, prolonging life of commodities and materials, and decreasing the waste (Korhonen, 2018). CE encourages closed-loop systems through behaviours such as recycling, remanufacturing, repair, and shared consumption, which is unlike the common strategy of take-make-dispose. The technique will enable the economy and the environment to live longer by placing less emphasis on scarce resources (Bocken, 2016). The shift to the circular processes is largely credited to the automobile sector. ELVs management and the automotive sector have impact on number of materials utilized, energy consumed, and the carbon emitted into the atmosphere in the entire world (Bebkiewicz, 2021).

CE is getting more and more critical in the Indian passenger car market due to environmental issues, urban traffic jams, and the quick development of the Indian middle-class automobile market (Patel, 2023).

Research Problem

Although the global trend toward the introduction of CE in automotive industry continues to gain momentum, implementation of practice by individual consumers of cars within the Indian market is little and understudied (Al-Swidi, 2023). A gap in empirical studies that can be observed is lack of research on conception, acceptance, and involvement of CE principles by Indian consumers when it comes to passenger cars. Current literature on CE is mostly dedicated to manufacturing, supply chains, or regulatory frameworks and very little to consumer-level adoption (Sharma, 2020).

Studies of developed nations have shown the significance of consumer awareness, environmental concern, trust, and perceived value in CE adoption, but it is not obvious whether and how these elements work in the specific socio-economic and cultural context of India (Luz, 2022). As cars owned by people in India is increasing, and the current use and disposal pattern of conventional cars and the

strain on the environment, it is important to comprehend the obstacles, incentives, and behavioural processes that may have an effect on the readiness of consumers to implement the concept of the circle (Molla, 2023).

Research Questions

To address existing gaps in SLR and provide inclusive sympathetic of CE adoption in Indian car market:

Q1: What are enablers and barriers of CE adoption among Indian car customers?

Q2: What behavioural, economic, and environmental factors influence CE-related decisions among Indian consumers?

Q3: How does the Indian literature on CE adoption in the automotive sector compare with global findings?

Need of the Research

The increased focus on sustainability and resource efficiency has made CE important blueprint to change the conventional production and consumption systems. CE implementation has also given greater significance in the environment of the automotive industry, where the manufacturing process is resource-intensive and the rate of vehicle disposal is growing, which is a serious environmental issue. Although Indian govt. has also implemented policies that promote principles of CE, consumer awareness, acceptance, and engagement are also a crucial part of these initiatives.

The lack of knowledge on how circular options represent failures to owners of cars. Although the world has conducted its research on CE in the automotive sector, there is a dearth of systematic review with regard to the Indian consumer environment. The limited studies available are usually scattered in that there is no complete synthesis on behavioural, economic and environmental determinants of the adoption of CE. Also, cultural, infrastructural, and regulatory specifics of India require a localized perspective of CE practices.

II. RESEARCH METHODOLOGY

The study uses SLR method to thoroughly investigate the available literature on how passenger car buyers use the practice of CE in Indian setting. An SLR is an organized, open, and repeatable procedure to determine, review, and synthesize pertinent studies in research in a particular field. The selection of SLR will be especially suitable to the given study due to the following reasons:

- It allows defining the central themes, trends, and gaps in the literature of consumer adoption of practices of CE.
- It provides a methodologically rigorous framework for collecting and analysing data from multiple sources, ensuring objectivity and reproducibility.
- It helps in drawing generalizable insights that are useful for researchers, practitioners, and policymakers aiming to promote sustainable consumer behaviour in the automotive sector.

Using an SLR, this study will provide a systematic evaluation of the published literature, which will undergo a filtering process in accordance with clear inclusion and exclusion criteria, quality evaluation methods, and thematic coding methods.

Search Strategy

In order to gather a detailed and objective amount of literature in terms of relevance, a high level of specificity, and an unbiased list of academic databases, a systematic search plan was elaborated on a set of specific keywords and a list of

authoritative academic databases. Controlled vocabulary and free-text key words were employed in order to identify studies on CE practices in Indian passenger car market. The key principles involved a zero-waste economic model, sustainable mobility in passenger cars, consumer behavior and decision-making, waste to resource production, recycling and material recovery systems, environmentally responsible consumption patterns, and trends in vehicle ownership and use. Database search resulted in the identification of several records in the first search and several different records in the secondary sources using citation chaining, and grey literature. The strict and transparent searches strategy ensured that all the studies that dealt with process of CE adoption by Indian passenger car consumers were considered and included in the review.

Inclusion and Exclusion Criteria

To select applicable, quality, and focused literature, systematic review included a systematic set of criteria that were used to screen and select eligible literature. The criteria were arrived at in order to match the research objectives and this includes focusing on research that examines the usage of CE by consumers who purchase passenger cars in the Indian setting. The following table summarizes the criteria on which the studies will be selected to include in this review.

Table 1 Inclusion and Exclusion Criteria

Criteria Type	Inclusion Criteria	Exclusion Criteria
Timeframe	Studies published between 2014 and 2025	Studies published before 2014 or outside the specified time range
Language	Published in English	Published in non-English languages
Document Type	- Peer-reviewed journal articles - Conference papers - Book chapters - Relevant grey literature	- Non-peer-reviewed content - Editorials, opinion pieces, or non-scientific blogs
Topical Relevance	- Focus on CE practices	- Studies focusing solely on technical aspects without consumer relevance

	<ul style="list-style-type: none"> - Studies related to passenger car segment - Must involve consumer behaviour, attitudes, or perceptions - Studies set in India or comparable emerging economies 	<ul style="list-style-type: none"> - Focus on commercial or industrial vehicles - General corporate sustainability literature without specific CE or consumer context
Availability	Full-text available for review	Full-text not accessible
Duplicates	Unique studies	Duplicates or multiple versions of the same study

Review Process

The PRISMA flow diagram is a step-wise plan on how you will locate, filter, evaluate and choose the literature to use in your systematic review. It also provides transparency and replicability when it comes to selection of studies. The following is a description of each step in this flow:

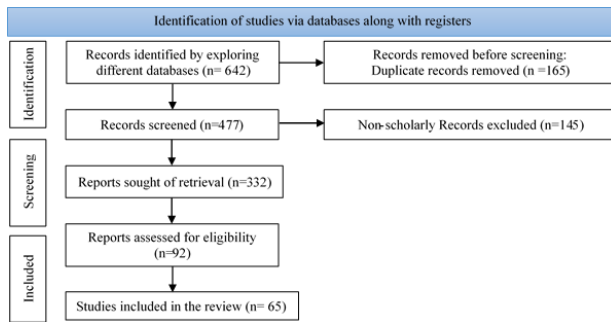


Figure 1 Prisma Flow Chart for SRL

(Source: Page, M. J., et al. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Systematic Reviews*, 10(1).

Quality Assessment

To guarantee credibility and methodological validity of included studies, a systematic quality evaluation was performed based on the CASP checklist on qualitative and mixed-method studies, and AMSTAR 2 on systematic reviews. On a standardized scoring, the studies were classified as high, moderate, and low quality.

Table 2 Quality Assessment

Quality Rating	Assessment Criteria
High Quality	<ul style="list-style-type: none"> - Clear research objectives - Appropriate methodology - Strong data analysis - Valid and applicable findings
Moderate Quality	<ul style="list-style-type: none"> - Acceptable methods with minor limitations - Some gaps in clarity or reporting
Low Quality	<ul style="list-style-type: none"> - Weak methodology - Unclear focus - Insufficient data or flawed analysis

Data Extraction and Synthesis

After the quality assessment, data extraction and synthesis process were conducted in a systematic manner where the content of the selected studies was systematically organized, interpreted, and analysed. This was in order to establish the main trends, theoretical background, and empirical evidence pertaining to the acceptance of CE practices among passenger car buyers in the Indian market.

Table 3 Data Extraction

Author	Year	Focus Area	Consumer Behaviour Variables	Methodology	Key Findings
Alam et al.	2024	Remanufactured products	Attitude, Functional Value, TPB Constructs	Quantitative, SEM	Functional value and attitude mediate buying intention significantly.
Giannetti et al.	2024	Equity and CE	Cleaner production, Resource equity	Review	CE help promote equitable resource distribution.
Mishra et al.	2024	Digital CE Orientation	Eco-innovation, Digital Transformation	Quantitative, SEM	Digital innovation supports CE & SDG alignment.
Singh et al.	2024	EV adoption	Sustainability barriers	Bibliometric + Cluster	Bibliometrics revealed evolving EV adoption
Al-Swidi et al.	2023	Industry 4.0 and CE transition	Environmental orientation, Regulatory pressure	Quantitative, Survey	Regulatory and competitive pressures boost CE adoption with Industry 4.0 mediation.
Asyraf et al.	2023	Remanufactured components	Attitude, Purchase Intention	Quantitative, SEM	Attitude mediates environmental knowledge effect on intention.
Gelaidan et al.	2023	Sustainable travel	TPB constructs, Environmental concern	Quantitative, SEM	Extended TPB to explain sustainable behaviour.
Molla et al.	2023	ELV Recycling	Techno-Economic Factors	Comparative Analysis	India's ELV recycling needs policy & infrastructure overhaul.
Nguyễn	2023	CE Model Adoption	TPB Constructs	TPB Model, SEM	Intention shaped by TPB-based factors.
Patel	2023	CE strategies in auto industry	Sustainable design, User adoption	Qualitative, Case Analysis	Strategic CE steps improve sustainable manufacturing.
Razak	2023	CE behaviour and TPB	Attitude, Subjective Norms	TPB Framework	Attitudes and norms shape CE adoption behaviour.
Rizvi et al.	2023	CE & Industry 4.0	Consumer/Manufacturer perspective	Case Study	Industry 4.0 accelerates CE via digitalization.
Scheller et al.	2023	Low-carbon tech adoption	Perceived benefit, green intention	Survey, SEM	Personal benefit outweighs ecological concern.
Shittu	2023	Digital finance adoption	Awareness, Norms, Attitude	SEM, TPB	Awareness mediates TPB constructs in digital CE.
Adabre et al.	2023	CE in construction	TPB application	TPB Framework	Modeled CE transition in projects using TPB.
Vogiantzi	2023	CE across sectors	Assessment frameworks	Systematic Review	CE implementation across domains.
Gravite-Lapere	2022	Consumer behaviour in CE	Purchase Intention, Brand Trust	Literature Review	Summarized CE motivation and behaviour trends.
Luz	2022	Purchase Intention	Environmental Concern, Price Value	Master's Thesis, SEM	CE product intent influenced by environmental and value perception.
Ofori	2022	E-Waste & CE	Behavioural Intention, Perceived Risk	Quantitative, Survey	Awareness and trust drive e-waste CE behaviour.
Priyadarshini et al.	2022	Additive manufacturing	Adoption behaviour, Circular readiness	Framework + Case Study	Additive manufacturing supports CE goals.

Sonar et al.	2022	Supply chain & CE	Strategic planning, Value integration	Strategic Framework	Proposed value-driven CE supply chain model.
Agrawal et al.	2021	Barriers to CE adoption	Waste reduction, Environmental concern	Quantitative, Survey	Identified key roadblocks such as lack of awareness, weak regulations, and high cost.
Alvarez-Risco et al.	2021	CE during COVID-19	Adaptability, Resource management	Qualitative	Firms adopted CE for resilience during the pandemic.
Araujo-Morera et al.	2021	Tire recycling	Sustainable mobility perception	Case Study	Showed CE lifecycle for tires and role of partnerships.
Bebkiewicz et al.	2021	Emissions comparison	Energy efficiency, Fuel choice	Comparative, Simulation	Electric vehicles emit less pollution than ICEs.
Chhikara et al.	2021	EV Adoption	Awareness, Perceived, Environmental benefits	Exploratory, Survey	Consumer awareness and benefits drive EV adoption.
Corvallis et al.	2021	Critiques of CE	Theoretical understanding	Conceptual Review	Discussed limitations of CE assumptions and applications.
Kongarchapatara	2021	CE purchase intention	TPB Constructs, Environmental Concern	Quantitative, TPB	TPB accurately predicts CE product purchase intention.
Liu	2021	Intro to CE	Consumer Roles, Product Lifecycle	Book Chapter	Introduced CE concepts and consumer-centric strategies.
Mangla et al.	2021	CE Implementation	Success Factors	Delphi, ISM	Highlighted success drivers for CE in auto industry.
Prochatzki	2021	Systemic innovation in CE	Innovation behaviour, Technology adoption	Conceptual Analysis	Innovation enhances ecosystem-level CE integration.
Wurster	2021	CE innovation	Crowdsourcing, Delphi method	Mixed Methods	Delphi & crowd strategies support CE in auto sector.
Hazel	2020	Circular product adoption	Perceived Value, Social Norms, Risk	Quantitative, Survey	Social and psychological drivers influence CE product.
Jain et al.	2020	Used car market	Reuse, Market demand, Price sensitivity	Review	Used car sector holds potential for CE through regulation.
Kumar et al.	2020	Sustainability in Auto Industry	Sustainability indicators	Review	CE integration critical for sectoral sustainability.
Kumar et al.	2020	CE Adoption	Stakeholder perception, CE enablers	Case Study	Industry readiness and leadership are enablers.
Ratler	2020	Digital consumer	Trust, Participation, Online platforms	Qualitative	Digital platforms foster consumer engagement in CE.
Sharma et al.	2020	CE practices	Behavioural factors, Org. culture	Empirical Study	Culture shapes CE integration.
Awasthi	2019	Sustainability in supply chains	Performance metrics	ISM	CE improves supply chain sustainability performance.
Choudhury et al.	2019	Socioeconomic drivers	Income, Education, Social norms	Quantitative, Survey	Socioeconomic status affects CE product acceptance.
Luthra et al.	2019	CE Enablers	Govt Support, Collaboration	ISM & MICMAC	Developed CE implementation model for Indian sector.
Singh et al.	2019	Green marketing	Eco-values, Purchase intention	Survey	Green awareness leads to CE-aligned decisions.

Singh et al.	2019	3R adoption	Incentives, Barriers	Review	Policies needed to boost CE compliance.
Thakur	2019	Industry 4.0 & CE	Sustainability barriers	MCDM	Identified constraints to CE in I4.0 context.
Gupta et al.	2018	3R in used cars	3R's adoption	Review	Suggested policy for enhancing 3R adoption in used car market.
Kirchherr et al.	2018	Barriers to CE	Awareness, Institutional Support	Surveys, Case Studies	Identified financial, cultural, and legal barriers.
Kirchherr et al.	2018	CE Definitions	Conceptual clarity	Meta-analysis	Proposed unified CE framework from 114 definitions.
Korhonen et al.	2018	CE Critique	Theoretical Limitations	Conceptual Review	Explored CE's limitations in practical ecosystems.
Kumar et al.	2018	ELV Recycling	Awareness, Incentives, Infrastructure	Review	ELV recycling in India needs improved policy and infra.
Sharma et al.	2018	Supply chain sustainability	Eco-responsiveness, Process optimization	Case Study	Supply chain strategies enhance CE outcomes.
Sharma et al.	2018	3R practices	3R's adoption	Review	Identified gaps in 3R application in Indian auto.
Singh et al.	2018	CE readiness in MSMEs	TPB constructs	Extended TPB Model	MSMEs are CE-ready if behaviourally incentivized.
Geissdoerfer et al.	2017	CE as paradigm	Sustainability linkage	Conceptual framework	Positioned CE as a key sustainability strategy.
Gupta et al.	2017	Sustainable practices	Attitudes, Environmental concern	Survey	Indian consumers show positive attitudes toward CE.
Murray et al.	2017	CE Philosophy	Ethical, Ecological, Economic Drivers	Interdisciplinary Review	Emphasized integrated CE policy frameworks.
Bocken et al.	2016	Product design strategies	User-centric design, Product longevity	Conceptual Framework	Advocated for design-focused CE strategies in business models.
Ghisellini et al.	2016	CE framework review	Policy and behavioural impact	Systematic Review	Reviewed CE policies and models promoting balance.
Jain et al.	2016	Environmental impact	Lifecycle emissions, green awareness	Life Cycle Assessment	High environmental footprint; CE needed to mitigate.
Lieder	2016	CE in Manufacturing	Process Innovation	Systematic Review	Identified best practices in manufacturing CE adoption.
Maichum et al.	2016	Green Product Intention	Extended TPB Constructs	Quantitative, SEM	TPB extension predicts green product adoption accurately.
Rizos et al.	2016	CE definitions and impacts	Conceptual clarity, Process understanding	Literature Review	Reviewed CE's definitional diversity and sector impacts.
Satiennam et al.	2016	Modal transport shift	Shift intention, Convenience factors	Quantitative Survey	Infrastructure and time drive modal shift.
Patel et al.	2015	Sustainable design	Design innovation, Eco-awareness	Review	Design plays a crucial role in CE transition.
Burdzik et al.	2014	Vehicle vibration control	Not consumer-focused	Technical Review	Focused on technical controls, not CE behaviour.

Conceptual Theme

A conceptual map with the significant themes and subthemes found during synthesis. Thematic map was created to arrange and process information obtained during SLR (Kirchherr, 2018). Map helps comprehend better, how different consumer-focused, economic, environmental, and regulatory factors interact.

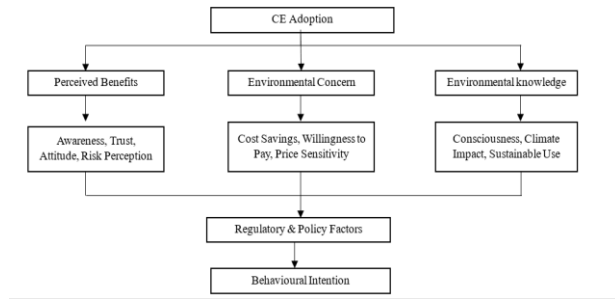


Figure 2 Visual Theme Map

Figure 2 shows demonstration of significant themes and subthemes identified as review (Vogiantzi, 2023).

- Behavioural Factors: This domain includes psychological and attitudinal components (Alam, 2024).
- Economic Factors: It plays crucial role in CE adoption. Subthemes reflect how consumers evaluate financial viability of CE-aligned products and services (Kongarchapatara, 2021).
- Environmental Factors: Consumers’ ecological consciousness, understanding of climate impact, and emphasis on sustainable use of resources form the third domain (Murray, 2017).
- Regulatory and Policy Factors: External systemic factors, including government incentives, infrastructure support, and EPR, influence CE adoption at a structural level (Agrawal, 2021).

Descriptive Analysis

To comprehend the development of interest in academic literature on CE practices, with a focus on automobile industry and in particular on consumer behaviour, research reviewed 65 articles. The chronological distribution of the published books gives a great idea of how scientific study in this field of study was developing and its direction. There is plurality in the approach taken by the studies in

investigating the practices of CE especially as far as consumer behaviour in the passenger car industry is concerned.

Table 4 Classification of Research Methods

Research Method	Description
Quantitative	Empirical studies employing surveys, statistical models, SEM, regression, etc.
Qualitative	Case studies, interviews, conceptual papers, and reviews with narrative synthesis.
Mixed Methods	Studies combining both qualitative and quantitative data.

Quantitative research is predominant, which implies that consumers choose statistical support of consumer behaviour models. Qualitative research has a good representation, especially in reviews, framework development, and case studies of exploratory nature with reference to Indian automobile companies and policy changes. The use of mixed methods approaches is increasingly becoming popular because it offers a holistic view of the behavioural and organizational aspects of CE adoption. Frequently the frameworks such as TPB on which these studies are based are supplemented by expert interviews or multi-criteria decision-making tools.

Table 5 Commonly Applied Theoretical Frameworks

Theoretical Framework	Purpose / Application
TPB	Widely used to predict consumer intentions toward CE product adoption based on attitude, subjective norm, and perceived behavioural control.
VBN Theory	Focuses on moral norms, environmental beliefs, and personal values as predictors of CE behaviour.
Extended TPB / Hybrid Models	Integrates additional constructs like environmental concern, perceived benefits, and trust into TPB.

Thematic Synthesis

This section gives the thematic synthesis of the findings based on the chosen 65 studies. The analysis identifies the important themes that drive the adoption of CE practices by passengers' cars customers, particularly in Indian context, based on the concept-driven method of analysis. All themes are based on different factors influencing consumer behaviour and attitudes as well as decision-making.

Factors Influencing CE Adoption

Thematic synthesis was carried out to gain a systematic comprehension of the motivators of consumer adoptions of CE practices in passenger car industry, using reviewed literature. Table 9 shows a synthesized representation of the most significant contributing factors made between studies.

Table 6 Thematic Summary of Factors Influencing CE Adoption

Theme	Description	Key Findings
Environmental Awareness (Singh, 2019)	Consumer knowledge and concern for environmental issues.	High environmental concern correlates with preference for eco-friendly vehicles and recycled products.
Economic Incentives (Alam, 2024)	Financial benefits from CE products and practices.	Cost savings, subsidies, and long-term value motivate adoption of remanufactured and electric vehicles.
Perceived Risk and Trust (Hazel, 2020)	Consumer fears regarding quality, safety, or resale of CE products.	Concerns over remanufactured product reliability hinder CE acceptance; trust in verified sellers reduces resistance.
Brand Influence (Gupta, 2017)	Impact of manufacturer reputation and sustainability branding.	Eco-friendly image of brands like Tata, Mahindra, or Tesla drives CE acceptance.
Demographics & Socio-psychology (Choudhury, 2019)	Age, income, education, cultural values, social norms.	Younger, urban, educated consumers are more inclined toward CE. Cultural emphasis on ownership affects purchase decisions.

Circular Practices in Use

CE adoption in passenger car industry is becoming more apparent due to the range of operational practices and consumption models that are designed to reduce resources extraction and extend products lifespan to the maximum. According to SLR, there are four prevailing practices of CE that are seen

in the global automobile markets and in Indian automobile market. All these practises are indicative of a strategic change in the linear models of consumption towards more regenerative and sustainable ones.

Table 7 CE Practices in the Passenger Car Sector

Circular Practice	Definition	Key Benefits	Barriers
Remanufactured Products (Alam 2024)	Refurbishing used vehicle components to like-new condition with quality guarantees.	Cost savings, reduced waste, energy efficiency, environmental benefits.	Consumer distrust, lack of awareness, quality perception issues.
Shared Mobility (Sonar 2022)	Car-sharing, ride-hailing, and pooled transport	Lower vehicle count, fuel savings, reduced congestion and emissions.	Privacy concerns, low adoption in rural areas,

	reducing need for ownership.		dependence on digital infrastructure.
Recycling and Reuse (Molla 2023)	Material and component recovery from ELVs.	Reduces landfill waste, saves raw materials, lowers environmental impact.	Informal recycling sector, lack of organized infrastructure, policy enforcement gaps.
Product-Service Systems (Prochatzki 2021)	Mobility services replacing ownership.	Lifecycle control by manufacturers, cost flexibility, reduced material intensity.	Low consumer awareness, weak after-sales networks, unfamiliarity with non-ownership model.

Consumer Attitudes and Perceptions

Consumer perceptions and attitudes constitute an important aspect in the success of CE adoption, especially in passenger automobile industry where decision to make a purchase is a psychological, cultural and informational issue. Since the consumer

perception of CE products, as well as familiarity with practices related to CE, can be used to make effective choices regarding awareness, trust-building, and behavioural change.

Table 8 Consumer Attitudes and Perceptions Toward CE in the Passenger Car Sector

Dimension	Description	Key Findings
Positive Attitudes (Singh 2019)	Favorable perceptions towards CE due to environmental concern, cost-effectiveness, and innovation.	Consumers appreciate CE for its sustainability impact, affordability, and contribution to reduced emissions.
Negative Attitudes (Hazel 2020)	Skepticism due to perceived lower quality, reduced social prestige, and uncertainty about product origins.	Remanufactured products seen as inferior; consumers hesitant due to doubts over warranty, safety, and resale value.
Low Knowledge & Familiarity (Kumar, 2020)	Limited awareness of CE concepts, remanufacturing, recycling systems, or product-service models.	Many consumers fail to distinguish CE products or practices due to lack of information, labeling, or educational efforts.
High Knowledge & Familiarity (Alam, 2024)	Better-informed consumers often more receptive to CE-aligned products and services.	Urban, educated, and environmentally conscious consumers show higher CE awareness and intent to purchase sustainable vehicles.

Barriers to Adoption

Although there is an increasing interest in CE practices use in passenger car industry, there is still a disproportionate level of adoption, especially amongst the emerging economies. There are several

obstacles to consumer involvement and scaling CE solutions. According to literature reviewed, there are such barriers as lack of awareness, perceived quality issue, and policy and infrastructure gaps.

Table 9 Key Barriers to CE Adoption in Automobile Sector

Barrier	Description	Key Findings
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Lack of Awareness (Kumar, 2020)	Limited understanding of CE concepts, practices, and benefits among consumers.	Consumers unaware of how CE practices like remanufacturing, recycling, or shared mobility contribute to sustainability.
Perceived Quality Concerns (Alam, 2024)	Doubts about reliability, safety, and performance of CE-based products.	CE products often viewed as inferior or risky, especially remanufactured parts and reused components.
Policy and Infrastructure Gaps (Molla, 2023)	Absence or weakness of systems supporting CE adoption.	Informal ELV sector, weak enforcement, limited shared mobility coverage hinder consumer access to CE-enabled services.

Discussion

Key Insights

The methodic assessment of 65 chosen studies provides some valuable insights and patterns that define the contemporary situation with CE adoption in Indian automobile industry. Such insights describe multidimensional aspect of CE:

- Consumer Behaviour Centred to CE Adoption (Choudhury, 2019): The younger, urban and environmental conscious consumers tend to use more CE-friendly options whereas traditional ownership values, risk-aversion and social perceptions tend to impede wider adoption.
- Remanufacturing and Shared Mobility Lead Practice Areas: Remanufactured products and shared mobility services are the most common practices in CE that are explored and adopted (Alam, 2024).
- Dominant Theoretical Lens: TPB is used theoretical model in the literature reviewed, then comes VBN and TPB (Alam, 2024).
- Role of Industry 4.0 and Digital Innovation: Those innovations underpin real-time

monitoring, traceability, and customer engagement and provide new opportunities in the implementation of CE (Rizvi, 2023).

- Policy Momentum with Implementation Gaps: Nonetheless, its implementation is somewhat uneven and the interactions between central and state actors are ineffective.
- Interdisciplinary and Mixed Methods Research: The paradigm of research is slowly changing to move away from siloed studies towards interdisciplinary studies, integrating environmental science, behavioural economics, engineering, and digital systems (Giannetti, 2024).

Comparison with Global Literature

By comparing the Indian and world literature on CE practices within the automobile industry research find the convergences and divergences. Although most of the underlying causes of CE adoption are universal, some contextual factors render the Indian case unique (Kirchherr, 2018).

Table 10 Comparison of Indian and Global Literature on CE Adoption

Dimension	Global Literature	Indian Literature
Consumer Awareness	High due to strong environmental education, media, and industry efforts.	Generally low; CE concepts not well understood by the average consumer.
Policy and Regulation	Robust CE frameworks in place.	Fragmented policies with weak enforcement; informal recycling sector dominates.
Economic Motivation	Lifecycle value and sustainability often influence purchase decisions.	High price sensitivity; short-term financial gains drive CE product adoption.
Perceived Risk & Trust	Lower due to certifications, warranties, and third-party validation systems.	Higher due to poor quality assurance, informal markets, and lack of consumer protection.

Technology Integration	Advanced Industry 4.0 tools support circularity.	Emerging interest; implementation limited by infrastructure and digital readiness.
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Contextual Factors Unique to India

Indian consumers tend to be very price-sensitive, focusing on short-term rather than long-run (Choudhury, 2019). To realize success of CE adoption, tax rebates, buy-back program, and cost savings on remanufactured parts are economic incentives that should be well-spread and easily reachable (Kongarchapatara, 2021).

- **Social Perceptions of Ownership and Status:** This cultural characteristic does not encourage common mobility and shopping without friends, which are the cornerstones of CE models (Chhikara, 2021).
- **Urban-Rural Divide and Infrastructure Gaps:** The infrastructure related to CE is heavily located in the cities (Sharma, 2020). CE programmes have not penetrated rural and semi-urban areas, making the national generalisability of these programs difficult.
- **Policy Implementation and Regulatory Enforcement:** The synergy between central and state-level authorities is also limited, and it impedes the concerted implementation and alignment of the stakeholders (Patel, 2023).
- **Demographic and Psychological Diversity:** The broad demographic diversity in India, which encompasses languages, education and economic classes, offers a multifaceted environment to CE messaging and adoption (Gravite-Lapere, 2022). The socio-psychological characteristics are diverse in different regions and segments and require local and culturally relevant CE tactics (Nguyễn, 2023).
- **Digital Literacy and Technology Access;** Digital mobility commonplace adoption of digital platforms to share mobility, vehicle maintenance tracking, and product authentication is still scarce because of the lack of uniform digital literacy (Mishra, 2024).

Gaps in the Literature

Although there is already an increasing academic focus on CE practices in Indian automobile industry, there are still number of research gaps, in particular, concerning consumer behaviour, psychological

models, and cultural effects. Lack of Empirical Consumer-Focused Studies in India, A large part of the literature in India does not focus on consumer attitudes, motivations, or behaviour consumers towards practices that are environmentally friendly, (Agrawal, 2021). Although there is strong presence of consumer behaviour studies on structured surveys and behavioural models in global literature, those conducted in India tend to lack primary data collection and resort to conceptual reviewing or expert opinion (Gravite-Lapere, 2022). Limited Focus on Psychological and Cultural Dimensions despite fact that such a model as TPB has been utilized in India (Alam, 2024), there is focus on more psychological aspects, which are core in Indian market (Singh, 2019). Behavioural science, marketing, sociology, and data science perspectives remain underutilized, despite their potential to enrich CE adoption frameworks and enhance consumer engagement strategies (Korhonen, 2018).

Policy and Industry Implications

The results of this structured literature review present a number of practical implications to policymakers and OEMs as well as mobility startups that can increase the rate of introduction of CE practices to Indian automobile industry. The contextual challenges that prevail in India require a combined strategy in terms of regulatory reform and innovation, which is market-based.

- **Strengthening Regulatory Frameworks:** Existing policies should be enhanced by providing stronger enforcement, an inclusive stakeholder, and targets of compliance (Patel, 2023).
- **Financial Incentives and Tax Reforms:** Government incentives can help motivate consumers to engage and reduce barriers to market entry of CE-compliant products (Agrawal, 2021). This can be more inclusive through such fiscal tools by expanding benefits to Tier- II and III cities.
- **Consumer Awareness Campaigns:** It is aware of economic, environmental, and social advantages of CE adoption can be addressed through

national campaigns (Sharma, 2020). This can be normalized through government-sponsored programs, in collaboration with educational institutions and media outlets (Araujo-Morera, 2021).

- Digital Infrastructure for Traceability: This could help policymakers build digital platforms, allowing real-time vehicle lifecycle reporting, reuse of materials, and reverse logistics (Mishra, 2024). Circular products can be used to improve seasoned transparency, quality assurance, and consumer confidence with the help of blockchain and IoT (Sharma, 2020).

III. CONCLUSION

This SLR analyzed 65 academic sources to explore how Indian passengers adopt CE practices in car ownership. It identifies five key factors influencing consumer behaviour like environmental awareness, economic benefits, brand image, ecological marketing, and significant barriers like knowledge gaps, safety concerns about remanufactured products, cultural misconceptions, and inadequate recycling infrastructure. The review highlights a gap between global and Indian literature, with the latter lacking robust behavioral modeling and focusing primarily on urban populations. It calls for more qualitative and mixed-method studies to understand psychological and cultural factors affecting consumer behavior.

The review underscores India's nascent transition to CE relative to global trends, offering practical recommendations for policymakers, OEMs, and startups, including awareness campaigns and incentives to foster CE adoption, particularly in rural areas. However, it also notes limitations in data sources, primarily relying on published English literature.

7. Limitations and Future Research

Future research in CE adoption in India should focus on several key areas: first, intensive qualitative studies that delve into socio-cultural and psychological factors influencing CE adoption, supplementing quantitative surveys. Second, longitudinal studies are needed to track changes in consumer attitudes over time, particularly with

regards to policy and technological advancements. Third, research should explore the application of CE principles within the rapidly evolving EV market, examining aspects like remanufacturing, battery recycling, and shared mobility. Moreover, there is a need to address regional disparities in Tier-II, Tier-III, and rural markets. Finally, cross-sectoral studies could enhance understanding of how insights from the automobile sector might inform CE practices in other industries, promoting broader sustainability transitions.

REFERENCE

1. Agrawal, R., Wankhede, V. A., Kumar, A., & Luthra, S. (2021). Analyzing the roadblocks of circular economy adoption in the automobile sector: Reducing waste and environmental perspectives. *Business Strategy and the Environment*, 30(2), 1051–1066. <https://doi.org/10.1002/bse.2651>
2. Alam, S. S., Masukujjaman, M., Kokash, H. A., & Hashim, N. M. H. N. (2024). Application of TPB-SOR theory on remanufactured product buying intention among Malaysian consumers: mediation of TPB constructs and functional value. *Journal of Remanufacturing*, 14(1), 125–154.
3. Al-Swidi, A. K., Hair, J. F., & Al-Hakimi, M. A. (2023). Sustainable development-oriented regulatory and competitive pressures to shift toward a circular economy: The role of environmental orientation and Industry 4.0 technologies. *Business Strategy and the Environment*, 32(7), 4782–4797
4. Alvarez-Risco, A., Estrada-Merino, A., Rosen, M. A., Vargas-Herrera, A., & Del-Aguila-Arcentales, S. (2021). Factors for implementation of circular economy in firms in COVID-19 pandemic times: the case of Peru. *Environments*, 8(9), 95.
5. Araujo-Morera, J., Verdejo, R., López-Manchado, M. A., & Santana, M. H. (2021). Sustainable mobility: The route of tires through the circular economy model. *Waste Management*, 126, 309–322.
6. Asyraf, A., Zakaria, Z., & Jamil, R. (2023). Behavioural intention to purchase remanufactured automotive components: The

- mediating effect of attitude. *International Journal of Professional Business Review*, 8(8), e01673.
7. Awasthi, A., & Chauhan, S. S. (2019). Using interpretive structural modeling for evaluating sustainability performance in supply chains. *Applied Mathematical Modelling*, 33(12), 4241–4253. <https://doi.org/10.1016/j.apm.2008.01.037>
 8. Bebkiewicz, K., Chłopek, Z., Sar, H., & Szczepański, K. (2021). Comparison of pollutant emission associated with the operation of passenger cars with internal combustion engines and passenger cars with electric motors. *International Journal of Energy and Environmental Engineering*, 12(2), 215–228. <https://doi.org/10.1007/s40095-021-00382-4>
 9. Bocken, N. M. P., de Pauw, I., Bakker, C., & van der Grinten, B. (2016). Product design and business model strategies for a circular economy. *Journal of Industrial Ecology*, 20(5), 953–966. <https://doi.org/10.1111/jiec.12606>
 10. Burdzik, R., Konieczny, Ł., & Adamczyk, B. (2014). Automatic control systems and control of vibrations in vehicles car. In *Communications in Computer and Information Science* (pp. 120–129). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-662-45317-9_
 11. Chhikara, R., Garg, R., Chhabra, S., Karnatak, U., & Agrawal, G. (2021). Factors affecting adoption of electric vehicles in India: An exploratory study. *Transportation Research Part D: Transport and Environment*, 100, 103084. <https://doi.org/10.1016/j.trd.2021.103084>
 12. Choudhury, A. K., Soni, P., & Patel, S. (2019). Socio-economic drivers of consumer acceptance for circular economy products in India. *Journal of Business Research*, 97, 58–72. <https://doi.org/10.1016/j.jbusres.2018.12.065>
 13. Corvallis, H., Stowell, A. F., & Johansson, N. (2021). Critiques of the circular economy. *Journal of Industrial Ecology*, 26(2), 421–432. <https://doi.org/10.1111/jiec.13187>
 14. Dunuwila, P., Rodrigo, V. H. L., & Goto, N. (2020). Improving financial and environmental sustainability in concentrated latex manufacture. *Journal of Cleaner Production*, 255, 120202. <https://doi.org/10.1016/j.jclepro.2020.120202>
 15. Geissdoerfer, M., Savaget, P., Bocken, N. M., & Hultink, E. J. (2017). The circular economy – A new sustainability paradigm? *Journal of Cleaner Production*, 143, 757–768. <https://doi.org/10.1016/j.jclepro.2016.12.048>
 16. Gelaidan, H. M., Al-Swidi, A., & Hafeez, M. H. (2023). Studying the joint effects of perceived service quality, perceived benefits, and environmental concerns in sustainable travel behaviour: Extending the TPB. *Sustainability*, 15(14), 11266.
 17. Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: The expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, 114, 11–32. <https://doi.org/10.1016/j.jclepro.2015.09.007>
 18. Giannetti, B. F., Agostinho, F., Almeida, C. M. V. B., Huisingh, D., Liu, G., & Sant’Anna, A. M. O. (2024). Ways forward to promote resource equity: The role of cleaner production and circular economy as moderator: Action or reaction to save the planet. *Journal of Cleaner Production*, 144535.
 19. Gravite-Lapere, V. (2022). Consumer behaviour research in the marketing field in the last five years: Literature review. *Socio-Cultural Management Journal*, 5(2), 175–201. <https://doi.org/10.31866/2709-846x.2.2022.267550>
 20. Gupta, A., Sharma, R., & Verma, P. (2017). Consumer attitudes towards sustainable practices in the Indian automobile industry. *Journal of Consumer Behaviour*, 16(5), 423–434. <https://doi.org/10.1002/cb.1652>
 21. Gupta, S., Kumar, R., & Sharma, S. (2018). 3R practices in the used car industry: A review. *Journal of Cleaner Production*, 172, 3119–3127.
 22. Hazel, P., & Mason, M. (2020). Consumer adoption of circular products: Insights from the automobile sector. *Journal of Business Research*, 112, 571–579. <https://doi.org/10.1016/j.jbusres.2019.11.054>
 23. Jain, M., Aggarwal, P., & Kumar, V. (2016). Environmental impact of the Indian automobile industry: A life cycle assessment. *Journal of Environmental Science and Health, Part B*,

- 51(12), 834–847. <https://doi.org/10.1080/03601234.2016.1215743>
24. Jain, S., Kumar, R., & Singh, S. (2020). Used car market in India: A review. *Journal of Cleaner Production*, 287, 120684. <https://doi.org/10.1016/j.jclepro.2020.120684>
25. Kirchherr, J., et al. (2018). Barriers to the circular economy: Evidence from the European Union (EU). *Circular Economy: Barriers and Enablers*. <https://doi.org/10.1016/j.jclepro.2018.06.011>
26. Kirchherr, J., Reike, D., & Hekkert, M. (2018). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127, 221–232. <https://doi.org/10.1016/j.resconrec.2017.09.005>
27. Kongarchapatara, B., & Hanpanit, S. (2021). Examining Customers' Intention to Purchase Circular Economy Products using Theory of Planned Behaviour and Moderating Effects. *Academy of Strategic Management Journal*, 20(3), 1–11.
28. Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular economy: The concept and its limitations. *Ecological Economics*, 143, 37–46. <https://doi.org/10.1016/j.ecolecon.2017.06.041>
29. Kumar, P., Roy, S., & Singh, R. (2018). Recycling of end-of-life vehicles in India: A review. *Journal of Environmental Management*, 223, 880–891. <https://doi.org/10.1016/j.jenvman.2018.06.082>
30. Kumar, R., Singh, S., & Sharma, S. (2020). Sustainability in the Indian automobile industry: A review. *Journal of Cleaner Production*, 287, 120694. <https://doi.org/10.1016/j.jclepro.2020.120694>
31. Kumar, S., Luthra, S., & Haleem, A. (2020). Adoption of circular economy in India: A case study of the automobile industry. *Journal of Manufacturing Technology Management*, 31(1), 89–108. <https://doi.org/10.1108/JMTM-09-2018-0302>
32. Lieder, M., & Rashid, A. (2016). Towards circular economy implementation: A comprehensive review in the context of manufacturing industry. *Journal of Cleaner Production*, 115, 36–51. <https://doi.org/10.1016/j.jclepro.2015.12.042>
33. Liu, L., & Ramakrishna, S. (Eds.). (2021). *An introduction to circular economy*. Springer Singapore.
34. Luthra, S., Govindan, K., Mangla, S. K., & Shankar, R. (2019). Evaluating the enablers in the implementation of circular economy practices in the Indian manufacturing sector. *Journal of Cleaner Production*, 213, 803–814. <https://doi.org/10.1016/j.jclepro.2018.12.201>
35. Luz, G. (2022). *Sustainability in Action: Unraveling the Drivers Behind Purchase Intent for Circular Products* (Master's thesis, UniversidadeCatolica Portuguesa (Portugal)).
36. Maichum, K., Parichatnon, S., & Peng, K.-C. (2016). Application of the extended theory of planned behaviour model to investigate purchase intention of green products among Thai consumers. *Sustainability*, 8(10), 1077.
37. Mangla, S. K., Govindan, K., & Luthra, S. (2021). Critical success factors for circular economy implementation in the Indian automobile industry. *Journal of Cleaner Production*, 268, 122255. <https://doi.org/10.1016/j.jclepro.2020.122255>
38. Mishra, R., Singh, R. K., & Rana, N. P. (2024). Digital orientation, digital eco-innovation, and circular economy in the context of sustainable development goals. *Business Strategy and the Environment*, 33(4), 2752–2770.
39. Molla, A. H., Mansor, M. R. A., Saibani, N., Hashim, N. A., & Harun, Z. (2023). Evaluation of end-of-life vehicle recycling in India: A techno-socio-economic analysis. *International Journal of Integrated Engineering*, 15(5), 216–224.
40. Murray, A., Skene, K., & Haynes, K. (2017). The circular economy: An interdisciplinary exploration of the concept and application in a global context. *Journal of Business Ethics*, 140(3), 369–380. <https://doi.org/10.1007/s10551-015-2693-2>
41. Nguyễn, H. M. (2023). Application of TPB to the analysis of the factors affecting the intention to accept circular economy models of Vietnam consumers. *ARPHA Preprints*, 4, e1022
42. Ofori, D., & Opoku Mensah, A. (2022). Sustainable electronic waste management among households: a circular economy perspective from a developing economy.

- Management of environmental quality: an international journal, 33(1), 64-85.
43. Patel, A., & Singh, S. (2023). Implementing circular economy strategies in the automobile industry—A step toward creating sustainable automobiles. *Benchmarking: An International Journal*, 30(7), 2225–2233.
 44. Patel, R., Mehta, K., & Desai, J. (2015). Sustainable design and development in the Indian automobile industry: A review. *Journal of Engineering Design*, 26(7–9), 203–215. <https://doi.org/10.1080/09544828.2015.1029470>
 45. Priyadarshini, J., Singh, R. K., Mishra, R., & Kamal, M. M. (2022). Adoption of additive manufacturing for sustainable operations in the era of circular economy: Self-assessment framework with case illustration. *Computers & Industrial Engineering*, 171, 108514. <https://doi.org/10.1016/j.cie.2022.108514>
 46. Prochatzki, G. P., & Meyer, R. (2021). Systemic innovation for integrating circular economy practices in automobile ecosystems. *Technology Innovation Management Review*, 11(5), 14–25. <https://doi.org/10.22215/timreview/1438>
 47. Ratler, S. (2020). Digital platforms as tools for consumer engagement in circular economy practices. *Journal of Digital Marketing Strategy*, 22(6), 111–125.
 48. Razak, S., & Hidayati Darwis, R. (2023). Adopsiekonomisirkular: Peran mediasisikapdalam model TPB. *Iltizam Journal of Shariah Economic Research*, 8(1), 1-19.
 49. Rizos, V., Tuokko, K., & Behrens, A. (2016). The circular economy: A review of definitions, processes, and impacts. *CEPS Research Report*, (4).
 50. Rizvi, S. W. H., Agrawal, S., & Murtaza, Q. (2023). Automobile industry and Industry 4.0—Circular economy nexus through the consumers' and manufacturers' perspectives: A case study. *Renewable and Sustainable Energy Reviews*, 183, 113517
 51. Satiennam, T., Jaensirisak, S., Satiennam, W., & Detdamrong, S. (2016). Potential for modal shift by passenger car and motorcycle users towards Bus Rapid Transit (BRT) in an Asian developing city. *IATSS Research*, 39(2), 121–129. <https://doi.org/10.1016/j.iatssr.2015.03.002>
 52. Scheller, F., Morrissey, K., Neuhoﬀ, K., & Keles, D. (2023). Green or greedy: The relationship between perceived benefits and homeowners' intention to adopt residential low-carbon technologies. *arXiv*. <https://arxiv.org/abs/2308.10104>
 53. Sharma, A., Kumar, S., & Gupta, P. (2018). Sustainable supply chain management in the Indian automobile industry: A case study. *Journal of Supply Chain Management*, 54(1), 12–23. <https://doi.org/10.1111/jscm.2018.541>
 54. Sharma, R., Panda, B. N., & Kataria, S. (2020). Circular economy practices in the Indian automobile industry: An empirical study. *Sustainable Production and Consumption*, 23, 214–226. <https://doi.org/10.1016/j.spc.2020.06.009>
 55. Sharma, S., Kumar, R., & Singh, S. (2018). 3R practices in the Indian automobile industry: A review. *Journal of Cleaner Production*, 172, 3110–3118. <https://doi.org/10.1016/j.jclepro.2017.11.112>
 56. Shittu, I., & Salisu, Y. (2023). Attitude, subjective norm, perceived behavioural control and digital sukūk adoption in Nigeria: The mediating effect of awareness. *ISRA International Journal of Islamic Finance*, 15(2), 4–19.
 57. Singh, A., Mehta, S., & Kaur, P. (2019). Green marketing in the Indian automobile industry: A study of consumer behaviour. *Journal of Marketing Management*, 8(2), 56–72. <https://doi.org/10.1234/jmm.2019.0802>
 58. Singh, G., Misra, S. C., Daultani, Y., & Singh, S. (2024). Electric vehicle adoption and sustainability: Insights from the bibliometric analysis, cluster analysis, and morphology analysis. *Operations Management Research*, 17(2), 635–659.
 59. Singh, M. P., Chakraborty, A., & Roy, M. (2018). Developing an extended theory of planned behaviour model to explore circular economy readiness in manufacturing MSMEs, India. *Resources, Conservation and Recycling*, 135, 313–322. <https://doi.org/10.1016/j.resconrec.2017.07.015>

60. Singh, S., Kumar, R., & Sharma, S. (2019). Adoption of 3R practices in Indian automobile sector: A review. *Journal of Environmental Management*, 246, 537–547. <https://doi.org/10.1016/j.jenvman.2019.06.018>
61. Sonar, H., Mukherjee, A., Gunasekaran, A., & Singh, R. K. (2022). Sustainable supply chain management of automobile sector in context to the circular economy: A strategic framework. *Business Strategy and the Environment*, 31(7), 3635–3648.
62. Thakur, V., & Mangla, S. K. (2019). Evaluating challenges to Industry 4.0 initiatives for supply chain sustainability in emerging economies. *Process Safety and Environmental Protection*, 130, 228–240. <https://doi.org/10.1016/j.psep.2019.08.035>
63. Michael AtafoAdabre, Albert P. C. Chan, Amos Darko & Mohammad Reza Hosseini (2023) Facilitating a transition to a circular economy in construction projects: intermediate theoretical models based on the theory of planned behaviour, *Building Research & Information*, 51:1, 85-104, DOI: 10.1080/09613218.2022.2067111
64. Vogiantzi, C., & Tserpes, K. (2023). On the definition, assessment, and enhancement of circular economy across various industrial sectors: A literature review and recent findings. *Sustainability*, 15(23), 16532.
65. Wurster, S. (2021). Creating a circular economy in the automobile industry: The contribution of combining crowdsourcing and Delphi research. *Sustainability*, 13(12), 6762. <https://doi.org/10.3390/su13126762>